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JOURNAL OF EDUCATIONAL RESEARCH

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AN EXPERIMENT IN TEACHING CORRECTIVE READING TO EIGHT SEVENTH-GRADE PUPILS

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Purpose.—During a period of four years of experimentation in teaching reading to retarded readers in seventh-grade English classes in the University of Chicago High School it was demonstrated that competent, experienced English instructors could bring about material increase in the reading ability of nearly all pupils through group teaching carried on in the regular English classes.[1] In the fifth year the experiment was modified so that the teaching was done by an inexperienced teacher, advised by the school psychologist, and the instruction was carried on in a special period rather than in one of the English classes. This study will be reported in the present article.

Selection of the Pupils.—Near the beginning of the school year, 1933-34, the following tests were administered to the pupils in Grade VII of the University High School: the Otis Self-Administering Test of Mental Ability, Higher Examination, Form A; the Monroe Standardized Silent Reading Test, Test III, Form 2; the Traxler Silent Reading Test, Form 1; and the Progressive Achievement Test, Form A. After a study of the results of these tests and conferences with the teachers of the pupils, eight pupils who were especially low in reading achievement were selected for special work. There were five girls and three boys in the group. They ranged in age from twelve to thirteen and a half years. All the pupils fell within the normal range of 90-110 in intelligence quotient according to the results of the Otis test.

All eight pupils were consistently in the lowest quarter of the class in score on the reading tests, which measured rate, vocabulary, and comprehension. They were also below the grade norms in nearly all parts of the

[1] Traxler, Arthur E. "Group Corrective Reading in the Seventh Grade—An Experiment," *School Review*, XLI (September, 1933), pp. 519-30.

tests. All of them obviously needed corrective instruction in reading, but it was thought desirable to allow them to become thoroughly adjusted to the work of the seventh grade before requiring extra work of them. Therefore, the special reading class was not begun until near the end of the first semester.

Just preceding the launching of the corrective program, these pupils were given three additional reading tests — the Sangren-Woody Silent Reading Test, the Traxler Silent Reading Test, Form 2, and the Gray Standardized Oral Reading Paragraphs. The results of these tests, which were given about twelve weeks after the beginning of the school year, showed that the pupils were not learning to be effective readers as a result of the regular work of the grade. Their average gain on the Traxler test from June, 1933, to January, 1934, was trifling in amount. A small average gain in rate was offset by small average losses in vocabulary and comprehension. The pupils tended to be below the seventh-grade norm on the Sangren-Woody Reading Test except in the word-meaning part, which is, at the seventh-grade level, more nearly a test of rate of working than of vocabulary. Most of them were much below norm on the Gray Standardized Oral Reading Paragraphs.

Reading Needs of the Group.—A detailed study of the reading records of each individual pupil showed that the group as a whole needed:

1. Practice in rapid reading of easy material under timed conditions, with comprehension checked either by written questions or discussion, or both.

2. Careful, thoughtful reading of expository and descriptive material, with emphasis upon understanding rather than rate.

3. An aroused interest in the meaning of words and training in the use of the dictionary.

How the Class Work Was Organized.—The plan of the class instruction in corrective reading was as follows: The eight pupils met as a class for two periods each week under the supervision of the school psychologist. The time used was time that the pupils would otherwise have spent in reading or studying in the library. The psychologist took the class for the first two periods of instruction. Thereafter, the major part of the teaching was done by a practice teacher,[2] who had had no previous teaching experience except one quarter of observation and teaching in English. A few minutes near the beginning or the end of each period were used by

[2] Miss Elizabeth Gonigam.

the psychologist in giving test lessons, but nearly all the actual instruction was done by the practice teacher. Although she consulted with the psychologist in planning her work, she had great freedom in the choice of reading materials and in the use made of these materials.

How the Instruction Was Carried On.—An attempt was made to direct the teaching toward the greatest reading weaknesses of the group. Although individual variations were of course evident, there was a great deal of similarity in the needs of the pupils in the class. All of them needed attention in the matter of rate of reading; all but one read too slowly and that one read too rapidly to be accurate. Every pupil needed to acquire a larger reading vocabulary and practically all of them were deficient in the comprehension of difficult passages.

The usual plan was to utilize the greater part of the class hour in reading and discussing a selection from a book. Sometimes, the reading was carried on paragraph by paragraph with detailed questions on each part. On other occasions the pupils were timed while reading a selection covering several pages and were asked more general questions involving their understanding of the organization and the main ideas. The books used most frequently were Lyman and Hill, *Literature and Living*, Book II[3] and Theisen and Leonard, *Real Life Stories*, Books VII and VIII.[4] About fifteen minutes near the beginning or the end of the period were used in having the pupils read and discuss the *McCall-Crabbs Test Lessons*, Book IV.[5] In these lessons, three minutes are allowed for the reading of a paragraph and the answering of ten multiple-response questions based on the paragraph. The raw score is translated into a G-score, or grade-score, by means of a table. The pupils kept a graphical record of their G-scores, which added materially to their interest in this type of reading.

After each meeting the psychologist wrote a summary of the work of the period. The following notes are typical of the kind of record that was kept.

January 25.—The reading selection was "Inventions," *Literature and Living*, Book II, pp. 136-139. The instructor explained the kind of read-

[3] Lyman, Rollo L., and Hill, Howard C. *Literature and Living, Book II.* New York: Charles Scribner's Sons, 1925.

[4] Theisen, W. W., and Leonard, S. A. *Real Life Stories*, Books VII and VIII. New York: The Macmillan Company, 1929.

[5] McCall, William A., and Crabbs, Lelah Mae. *Standard Test Lessons in Reading*, Book IV. New York: Bureau of Publications, Teachers College, Columbia University, 1926.

ing known as "skimming" and then directed the pupils to skim the selection looking for the three inventions and the three main ideas contained in it. After all had found them, there was discussion of the inventions and ideas. There was also further discussion of the nature of skimming. Then the pupils read the selection and discussed details. The teacher directed their attention to certain words and phrases essential to an understanding of the selection. All the pupils entered into the discussion with interest. The psychologist took the group during the last fifteen minutes. He explained how the G-scores on the McCall-Crabbs Test Lessons are shown graphically and then had the pupils read lessons 7 and 8.

February 1.—The instructor conducted the reading of "Forest Fires," in Lyman and Hill's *Literature and Living*, Book II, pp. 563-67. The emphasis was on comprehension. This selection is divided into three parts with questions at the end of each part. The group read a part, discussed the questions, then read another part and discussed the questions, and continued in this fashion until the selection was completed. All took part in the discussion; pupils 1, 2, and 8 were especially active. Several members of the group added to the interest of the discussion by contributing information of their own. Unfamiliar words were then taken up and discussed. Finally, certain general ideas were brought out. After the discussion of the reading selection was finished, the class read McCall-Crabbs Test Lesson 8.

February 6.—The instructor had the pupils read "The Beaver and His House" in Theisen and Leonard's *Real Life Stories*, Book VIII, pp. 222-230. The pupils read it straight through from beginning to end with rates that varied from 3.1 to 3.7 words per second. Rather detailed discussion and rereading took up the rest of the period. Pupils 4 and 7 were the most active; pupils 2 and 6 were the least responsive. The instructor's questions were for the most part thought questions rather than factual questions.

February 16.—The McCall-Crabbs Test Lessons 12 and 13 were used with the group at the beginning of the hour. The class was then directed to read "Turkey Red," in Lyman and Hill's *Literature and Living*, Book II, pp. 27-39. The pupils read the whole selection without interruption and without being timed. The story is a good one for giving the pupils training in following the organization used by the writer, as it has four main divisions analogous to links in a chain. When the pupils had finished reading the instructor began a discussion of the story with them for the purpose of helping them to see the major divisions. With the aid of questions by the teacher, the class was able to reproduce the outline of the story, including the four major parts, very well. However, it was evident when the period ended that there were a number of points that the pupils did not understand. The instructor planned to continue the discussion with them at the next meeting.

February 20.—The instructor had the group skim the selection "Turkey Red" to bring the story back to mind, after which she continued

the discussion of it with them. By a series of questions, she led them to see some of the more subtle connotations of the selection, as, for example, how Turkey Red symbolized courage in the lives of the pioneer people. After the discussion of "Turkey Red" was finished, the class read rapidly "Horace Greeley's Ride," in Lyman and Hill's *Literature and Living*, pp. 392-395. This humorous story by Artemus Ward was very entertaining to the group and gave them little reading difficulty. Before the period ended the pupils read McCall-Crabbs Test Lessons 14 and 15 and recorded their G-scores.

Improvement of Reading Group.—The instruction was begun on January 9 and was brought to a close on March 14. It covered a period of approximately nine weeks. Nineteen periods were used in reading instruction and four periods in testing. The tests used in measuring progress were the Monroe Standardized Silent Reading Test, Test III; the Iowa Silent Reading Test; the Sangren-Woody Silent Reading Test; and the Traxler Silent Reading Test.[6] Alternate forms of the tests were used except in the case of the Iowa test. The Sangren-Woody test and the Traxler test covered the period of the teaching, while the other two tests covered a longer period because of the fact that the first forms of them were given as entrance tests. The mean scores of the group on the first administration and the second administration of these tests and the mean gains are shown in Table I.

TABLE I

AVERAGE SCORES OF READING GROUP ON FOUR READING TESTS ADMINISTERED BEFORE AND AFTER CORRECTIVE TEACHING AND GAINS FROM FIRST ADMINISTRATION TO SECOND

Test	Before Teaching	After Teaching	Gain	Norm
Monroe Silent Reading				
Rate	72.9	86.4	13.5	83.0
Comprehension	16.6	22.9	6.3	23.0
Iowa Silent Reading				
Rate	15.3	20.3	5.0	21.0
Comprehension	34.0	54.1	20.1	58.0
Sangren-Woody Reading	75.5	79.5	4.0	86.0
Traxler Silent Reading				
Rate	27.6	33.6	6.0	34.0
Vocabulary	8.3	15.0	6.7	14.0
Comprehension	25.5	31.8	6.3	24.0
Total score	61.4	80.4	19.0	72.0

The group as a whole gained on all the tests. The gain was relatively small on the Sangren-Woody test but was quite large on the other tests.

[6] The Iowa test and the Sangren-Woody test are published by the World Book Company; the Monroe test and the Traxler test are published by the Public School Publishing Company.

The improvement in score on the various tests is equal to the following amounts of growth in reading ability, stated in terms of grades: Monroe Silent Reading Test, approximately two grades; Iowa Silent Reading Test, approximately 1.8 grades in comprehension and two grades in rate; Sangren-Woody Reading Test, about one-half grade; Traxler Silent Reading Test, approximately two grades.

Although there was improvement in all the mean scores, some individuals failed to gain on some tests. In all there were fifty-seven instances in which the pupils gained in score on the tests, thirteen instances in which they lost, and two instances in which they neither gained nor lost. In other words, of seventy-two opportunities to improve, they gained on fifty-seven, or 79.4 percent, of the chances.

Permanence of Improvement.—On June 12, 1934, eleven and one-half weeks after the date of the tests at the end of the period of instruction, Form 4 of the Traxler Silent Reading Test was given to the pupils who had been in the reading group. This test was administered to find out whether or not the pupils had maintained the level they had reached when they were measured with Form 3 just after the group instruction was discontinued. The average scores made by the eight pupils on each part of Form 3 and Form 4 and the gain from Form 3 to Form 4 are shown in Table II.

TABLE II

MEAN SCORES MADE BY READING PUPILS ON FORM 3 AND FORM 4 OF TRAXLER SILENT READING TEST, ADMINISTERED ON MARCH 20 AND JUNE 12, RESPECTIVELY

Part	Form 3	Form 4	Gain*
Rate of reading	33.6	30.3	−3.3
Vocabulary	15.0	16.1	1.1
Comprehension	31.8	31.5	−0.3
Total score	80.4	77.9	−2.5

*A minus sign (−) preceding a number in the gain column indicates a loss in score.

The only significant loss of the group as a whole, between the time the group teaching was discontinued and the end of the school year, was in rate of reading. There was a small gain in vocabulary and an insignificant loss in comprehension. In total score, three of the pupils gained and five lost. One of those who gained had received instruction one period a week after the group was disbanded. The average loss of 2.5 points in total score is trifling when compared with the average gain of 19 points made during the teaching. With one exception, each of the pupils was

considerably higher on the form of the test given at the end of the year than he was on the form administered before the teaching was begun. It seems that the improvement was fairly permanent, although the apparent permanence may have been due to the fact that the pupils were receiving incidental training in reading in their regular class work.

SUMMARY

Eight seventh-grade pupils who were low in reading ability were taught reading two periods a week for nine weeks by a practice teacher, advised by the school psychologist. According to the results of reading tests seven of them derived considerable lasting benefit from the instruction. The results of the study should encourage teachers who have not had special training in the technique of teaching reading to undertake the correction of the reading difficulties of their pupils.

A STUDY OF THE INFLUENCE OF MANUSCRIPT WRITING AND OF TYPEWRITING ON CHILDREN'S DEVELOPMENT

EDITH UNDERWOOD CONARD
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I. HISTORY OF WRITING

HANDWRITING is an acquired art used to record thought or to communicate with others. It has developed from the crude primitive stages of symbols and picture form to ideational, through the phonetic, to the present alphabetic form. History shows us how writing has been influenced by the needs and interests of the people, by the materials used, and by the tools employed. So we find the earliest form of records or communications were cairns or piles of stones made by primitive people. Examples of these have been recorded in Bible history. Down through the ages we trace clay tablets and sharp edged tools of Babylonian days, wax tablets and metal stylus used by Greeks and Romans; reed, quill, or bamboo pens used on papyrus, parchment, or vellum by the Monks in making the beautiful manuscripts of the middle ages. Later with the introduction of printing and the institution of copybooks made from copper plates, fine steel pens and fountain pens were invented. All of these materials and tools in turn influenced writing and the keeping of records.

The earliest record of a machine for writing, the forerunner of a typewriter was patented about 1714. This was never manufactured. Several other machines were patented in the 18th century making embossed letters for the blind. In 1823, Mr. W. Burt of Detroit patented a typewriter, the original being destroyed by fire in Washington Patent Office. However, he improved upon the original and manufactured his machine. In 1843 Charles Thurber of Worcester, Massachusetts, patented and manufactured a machine which also was improved upon some years later. Since 1850 a large variety of machines have been put on the market. The modern machine is less complicated, lighter in weight, and easier to handle than were the previous types.

Worth of Manuscript Writing. — Present manuscript writing is adapted from that written by the Monks. Recent research has proven that manuscript writing is worthwhile for children. In this country most progressive schools, both public and private, have realized the value in teaching manuscript writing and are carrying it through the primary grades. In many cases, unless pressure from the outside has been brought to bear on the school, the children write in manuscript all through the ele-

mentary grades. Such school systems as Shakerheights, Ohio; Bronxville, New York; New London, Connecticut; and Winnetka, Illinois; are typical examples of where manuscript writing is carried through the elementary grades and even into the high school.

Through experiment and research manuscript writing has been found to be of value as follows:

1. It is easy to acquire because of the simple strokes. (Wise)
2. It requires less movement and fewer strokes than cursive writing. (Voorhis, Wise)
3. It is similar to the print in books and only one alphabet of large and small letters is necessary. (Finch, Voorhis, and Wise)
4. Children can see their difficulties and correct them easily. (Finch, Grill, Voorhis, Wise)
5. Young children with immature motor control can write material which is readable. There are no failures. (Finch, Gates, Wise)
6. There is less strain produced on the eyes when learning manuscript. . . . Sight saving specialists advocate it. (Bell, Grill, Turner)
7. The pen may be lifted in making strokes apparently lessening fatigue on immature muscles. (Finch, Wise)
8. It is as easy to read as typewriting and much easier than cursive writing. (Bell)
9. It facilitates reading—probably due to the simple formation of the letters. (Voorhis, Finch)
10. Many teachers feel that it aids in spelling due to the visual formation being the same as in print form. (Voorhis, Bell, Finch)
11. Children in elementary grades can attain greater speed than in cursive writing. (Gates, Reeder, Voorhis)

II. EXPERIMENTS IN TYPEWRITING

Previous to 1930 most experimentation in handwriting and typewriting was carried on separately and with the adolescent, or adult age group. This was partly due to the fact that typewriters were clumsy in size and too expensive for elementary schools to buy. But with the advent of the portable machine certain educators who were interested in finding tools and equipment which might facilitate learning with young children became interested in considering the value of using the portable machine.

As early as 1926, shortly after the portable machines were on the market, by request of Mr. John T. Underwood, a special Underwood machine was built with Library Gothic Type to approximate closely the plain letters of manuscript writing. This was the first portable machine made with large size letters. This was tried out in the first grades of the Horace Mann School. The teachers all felt then, that the typewriter would be of

value in the classroom. Several years later a number of educators were approached and asked if they would sponsor a study, to find out whether the portable typewriter was a practical tool in the classroom. This study was undertaken by the Typewriter Educational Research Bureau, under the direction of Dr. Ben Wood and Dr. Frank N. Freeman. It was sponsored by a number of typewriter concerns of the United States.

The two year study, "An Experimental Study of the Educational Influence of the Typewriter in the Elementary Classroom," made under Dr. Wood's direction was carried out in various situations both private and public in all parts of the country. The results showed the great influence of the typewriter on all subjects in the classroom. They indicated that children who use the typewriter advance more rapidly in all subject matter in elementary school than those children who do not use the typewriter.

The present study was undertaken by the author in 1930-31 in the Horace Mann School in order to make a comparison of the influence of manuscript writing and of typewriting on learning in the classroom. The chief purpose of this study was to watch the children's growth, in handwriting, and in typewriting, both individually and by classes; to note the children's reactions and the teachers' attitudes; and to find out, if possible, whether the machine would be a practical tool for young children to handle, and how the use of the machine could be planned.

The problem as it evolved resulted in making a study of growth or improvement in speed and in quality through the year in manuscript writing and of improvement in speed and in quality or "lack of errors" in typewriting. Part of the problem was to find out if there was any outstanding influence noted upon phases of school work. Also, it was desired that a comparison be made of how the two types of written expression fitted into children's needs and interests in the elementary grades.

The raison d'etre in regard to the typewriter was that it would be of value as follows:

1. Young children are interested in the machine.
2. It required little muscular development.
3. It does not strain immature muscles.
4. Children can express ideas in writing by a motor pressure rather than by a more controlled movement.
5. It should help the child with poor motor control.
6. It should assist the left-handed child.
7. The results are accurate, quickly obtained and are very satisfying.
8. It apparently ties up closely with reading.
9. It might help the child inclined to stutter.
10. It should help the child with poor eyesight.

It has been the opinion of many teachers and educators of experience that children can write more easily and express their ideas more readily through first learning to use a mechanical device. Thus the difficulties of poor muscular control will not hinder expression.

III. METHODS OF PRESENT EXPERIMENT

The present study, lasted from November 1, 1930, to May 1, 1931, and was carried on in two second, two third, and two fourth grades, totaling 150 children. The children were paired as far as possible on the basis of chronological age and mental age. One group in each grade used the typewriter for written work. The other group had no typewriter but wrote in manuscript form. In the fourth grades the children had been using manuscript writing for four years and the typewriter was new; whereas in the second grade beginning to write on the typewriter more closely parallelled beginning to write by hand.

Plans for carrying out the work and an outline of suggestions on standards or goals were given to each teacher. A technique in regard to the handling of the typewriter was noted and carried out. A minimum amount of time was suggested for special typewriting or handwriting practice to avoid undue emphasis by the teacher. The children were encouraged to do as much written work as possible either by typewriter or in manuscript in school and were not to practice at home. Stress on speed and on quality (or errors) was emphasized equally. Aims and standards of work were built up as the children progressed. The teachers were asked to note how the children reacted to each type of writing. Samples of work were collected occasionally in order to show growth. Near the end of the period the children were asked to express their ideas on "Why I liked the typewriter."

The work was conducted by the classroom teacher assisted when necessary by the author. Tests planned by the author for handwriting and typewriting were given regularly. The handwriting test was given to all classes four times, and the typewriting test was given also four times to the typewriting group. Results of reading, composition, computation and spelling were noted at the beginning and at the end of the period.

The manuscript writing tests were scored against the Conard Manuscript Writing Standards for quality. In scoring errors on the typewriter one point was taken off for each error. An error represented any omission or addition of material so that the copy was not like the sample. For example, a perfect score meant the copy was made exactly like the sample, well spaced, correctly punctuated, with no misplaced letters. In this situa-

tion it was assumed that improvement in handwriting and improvement in typewriting were the same since both result in greater legibility. In this study we compared improvement in quality in handwriting with improvement by decrease in errors in typewriting.

To overcome the teacher-factor influence and to make for uniformity the handwriting and typewriting tests were supervised and given to each group by the author.

IV. RESULTS OF TESTS GIVEN TO CLASSES[1]

Tests in Manuscript Writing. — At the beginning of the year the classes selected from each grade were considered practically equal in Mental Age and in Chronological Age. The final results reported were from selected groups from each grade. These children were selected because they took all tests given during the year. Table I presents the average C.A. 6.8–8.8 and M.A. 8.6–10.6 of the "selected" groups.[2]

TABLE II

AVERAGE SPEED OF LETTERS PER MINUTE IN MANUSCRIPT WRITING

Grade Chn.	Control Group	First Score Averageσ	First Score	Fourth Score Averageσ	Fourth Score	Gainσ	Gain	Coef. Correlation	$\frac{D}{\sigma Diff.}$
II. (14)	Type	15.4	5.12	24.4	8.06	9.	1.4	.77 ± .06	(1.03)
II. (17)	Non-type	10.3	3.17	21.8	8.33	11.5	1.959	.27 ± .14	
III. (18)	Type	12	3.31	28.5	7.5	16.5	1.53	.50 ± .11	(3.08)
III. (18)	Non-type	19.1	3.09	29.5	5.82	10.4	1.25	.43 ± .12	
IV. (19)	Type	26	8.65	34.1	10.3	8.1	2.11	.54 ± .11	(3.9)
IV. (18)	Non-type	25.1	5.84	43.4	9.08	18.3	1.51	.71 ± .08	

Reports were given here on the first and last tests only. To show how closely the selected groups represent the class as a rule, the Second Grade class using typewriters had an average speed in manuscript writing in the first test of 15.2 letters per minute and an average speed in the last test of 26.4 letters per minute. Tables II and III show that the "selected" typewriting group from this class had an average speed in manuscript

[1] Only a brief report here. Grades III and IV omitted.
[2] Omit due to space (Table I).

TABLE III

AVERAGE QUALITY IN MANUSCRIPT WRITING

Grade Chn.	Control Group	First Score Averageσ	First Score	Fourth Score Averageσ	Fourth Score	Gainσ	Gain	Coef. Correlation	$\frac{D}{\sigma Diff.}$
II. (14)	Type	16.4	4.24	17.5	4.32	1.1	1.54	.09 ± .15	(.26)
II. (17)	Non-type	17.8	4.83	18.4	4.43	.6	1.21	.42 ± .13	
III. (18)	Type	28.1	8.6	36.8	7.52	8.7	2.26	.30 ± .14	(.59)
III. (18)	Non-type	36.2	3.59	43.4	4.64	7.2	1.15	.32 ± .14	
IV. (19)	Type	55.6	11.2	65.3	5.92	9.7	2.37	.40 ± .13	(.03)
IV. (18)	Non-type	53.0	8.4	62.8	4.44	9.8	1.92	.34 ± .14	

TABLE IV

AVERAGE SPEED IN LETTERS AND ERRORS IN TYPEWRITING TESTS GIVEN TO TYPEWRITING GROUP

Grade	Children	Speed 1st	Errors Testing	Speed 4th	Errors Testing	Gain Speed	Gain Errors
Grade II	(14)	14.0	9.5	18.9	6.3	4.9	3.2
Grade III	(18)	8.2	2.7	27.7	6.1	19.5	−3.4
Grade IV	(19)	14.9	7.7	38.4	4.0	23.5	3.7

writing of 15.4 letters per minute in the first test and an average speed in manuscript in the last test of 24.4 letters per minute. This meant a gain in speed for the selected group during the six months period of 9.

In speed in manuscript writing, the Second Grade non-typewriting group had an average score in the first test of 10.3 letters per minute and an average score in the last test of 21.8 letters per minute showing a gain of 11.5. The non-typewriting group showed a greater gain in speed in handwriting than the typewriting group which would be natural since the typewriting group was not encouraged to express their ideas by handwriting. The final test result of the non-typewriting group was not as high as the typewriting group probably due to the fact that the non-typewriting group were not as mature physically as the typewriting group.

In quality of manuscript writing the Second Grade typewriting group showed a gain of 1.1 points, while the non-typewriting group showed a slight gain of .6. Many of the children in this grade were still in the beginning stage of handwriting and this may account for the very slight gain made.

From a study of Table II and Table III it would appear that the differences in gains made in the 3rd and 4th grade groups in speed are more reliable than in the second grade. The gains in speed were more reliable than in quality. The co-efficients of correlation for the results of the tests in speed were higher than for *quality*.

INTERPRETATION OF TESTS FOR MANUSCRIPT WRITING

Speed of Manuscript Writing.—From a study of Table II[3] presenting the relationship of the Typewriting group and of the Non-typewriting group in speed of manuscript writing in grades II, III, and IV, it is clearly shown that the average scores were larger as the grade increased from II-IV inclusive. The Typewriting group had some advantage in speed of handwriting in the beginning in Grades II and IV, while in Grade III the Non-typewriting group began with an advantage in score and carried this advantage through the six months period. In each grade and group, each succeeding test showed an increasingly higher score, presenting a uniform improvement in handwriting as the grades advance.

Results also show a number of interesting facts:

1. That in all grades speed in manuscript overlapped consistently on the higher and lower levels.
2. That in second and third grades though the groups were further apart in speed in manuscript writing in the beginning they were more closely related by the end of the six months in spite of the controlled situation.
3. That the second grade Typewriting group though starting and ending in advance of the Non-typewriting group did not make as great a gain in speed of Manuscript writing during the six months time, though it showed a marked improvement in speed.
4. That the two third grades starting far apart were closer in speed of letters in manuscript writing by the end of the experiment than at any other period in spite of the experimental situation.
5. That the two fourth grades began about the same in speed in handwriting and again were close by the third test but by the end of the experiment were quite far apart, the Non-typewriting or handwriting group having the advantage.

Quality of Manuscript Writing.—From comparison of Tables II and III it is seen that there was relatively less progress in quality than in speed in each class situation though quality was spread out over a wider range in the three grades. The Typewriting group made more progress in Grades III and IV than the Non-typewriting group, while the opposite

[3] Graphs I, II, III, IV, omitted due to space.

was true in the case of Grade II. The relative ranking of the three grades may be readily observed based on same scale of scores. It is only in the case of the Grade IV that we find the Typewriting group consistently ranking higher than the other group in each of the four testings.

Results in Comparison of the Scores of Quality of writing also show:

1. That apparently there are very definite levels in quality of manuscript writing in the different grade groups.
2. That both the Typewriting and Non-typewriting groups consistently held to these levels and that these levels do not overlap as in the case of speed of manuscript writing.
3. That in the second and third grades the Non-typewriting groups attained a better grade in quality by the end of the experiment. But in the case of the fourth grade the opposite was true. The fact that the Non-typewriting fourth grade group had the advantage in speed may account for their slight disadvantage in quality.
4. On the other hand, it is an interesting fact that the use of the typewriter did not affect the quality of the handwriting in the fourth grade group.
5. It should be noted that the differences in quality of manuscript writing in the two groups are not only slight but quite unreliable according to Table III.

Results of Tests in Typewriting.[4]—In Table IV, the amount of gain in speed in typewriting for the Typewriting group, judged by average scores made in the first, and fourth testings, increased with the grade. Fewer errors were made by the second and fourth grades in the fourth test than in the first while in case of the third grade, the opposite was true.

In comparing the typewriting groups in Tables II, III, and IV, it may be seen that by the end of the six months manuscript writing was faster for the second grade though there was apparently a greater gain made in copying material correctly by typewriter than in improving strokes made by hand. As heretofore stated, the assumption was made that improvement in reduction of errors in typewriting resulted in greater legibility just as improvement in quality in handwriting has always resulted in greater legibility.

INTERPRETATION OF TESTS FOR TYPEWRITING

Speed of Typewriting.—Table IV shows clearly the progress made by each grade relatively. In the first testing, although the higher grade shows slightly higher average scores, the difference is not as great as we witness in progressive fashion in proceeding from first to fourth testing.

[4] Omitted detail of description Grades II, III, IV.

Number of Errors in Typewriting.—From Table IV we find a decreasing number of errors in the second and the fourth grade groups, while in the case of grade three the opposite is true. Grade three made consistently the fewer number of errors, notwithstanding the fact that there was a tendency to increase in number as the testings progressed.

A comparison of the findings show:

1. That there was a definite upward curve growth in speed in the three typewriting groups, though starting closer in the beginning they each made a more decided improvement as the grades advanced in age.
2. That there was a very gradual growth in speed in second grade with a fluctuating growth in fewer errors.
3. That in the case of the third grade there was an accelerated progressive improvement in speed and that this advanced score in speed apparently affected negatively the improvement in errors.
4. That the fourth grade group consistently showed improvement in both speed of typewriting and in making fewer errors.

Results of Other Tests (Table V.).—Average results[3] obtained in composite scores (spelling, arithmetic, and reading, etc.) and in composition scores show some uniformity in development throughout all groups. Since both the Typewriting and Non-typewriting groups show this uniformity in growth it appears that there was little influence from the experience in typewriting on the work in subject matter. Probably more definite results would have been seen if the test results in these subjects could have been checked more frequently.

In the groups where the typewriters were used, both children and teachers were most enthusiastic over the machine by the end of the experiment. The teachers felt that interest and work were stimulated and needs were met through using the typewriters, also correct results were more readily obtained.

The children in each grade were asked to give their reasons "Why I like the typewriter." A few typical reasons are as follows:

It writes faster.
It does not tire your hands.
It is more fun.
It is useful.
It makes better letters and is neater.
It is easier to read.

[3] Graphs III, IV and Table V omitted due to space.

V. CONCLUSIONS

The findings in the above study may be summarized as follows:

1. Many children in the second grade are in the beginning stage of handwriting and also are physically immature, hence there is seen a slow growth in both speed and quality of handwriting.

2. Due to the above, there appears a greater development in "decrease" of errors in typewriting in second grade than in improvement of speed.

3. In third grade the Typewriting group rather than the Non-typewriting group made the greatest gain in speed and in quality in both handwriting and typewriting. This group had had manuscript writing for three years and had had no typewriting experience but in six months time they showed a marked growth in both manuscript writing and typewriting, practically equalizing the speed in both by the end of the experiment.

4. In this same case the tremendous speed growth in typewriting apparently caused an increase of errors in typewriting.

5. But again this speed growth in typewriting did not affect the gain made in quality of manuscript writing in the same third grade group.

6. On the whole in the third grade Typewriting group, the improvement in both speed and quality of handwriting was hastened rather than slowed through using the typewriter.

7. In fourth grade the Non-typewriting group made more than double the gain in speed in manuscript writing than did the Typewriting group.

8. On the other hand the typewriting group made their greater gain in speed of typewriting. Apparently this age grade can develop speed whenever it sets out to do so. The factor of rhythm in movement may be influential in this grade. Both the Typewriting and Non-typewriting groups held closely to the same standards of quality in Manuscript writing in this grade.

9. It would appear that quality in handwriting is not affected by the use of the typewriter if the teacher is conscious of both.

10. In some instances speed in handwriting and in typewriting appeared to be attained at the expense of improvement in quality. This should be guarded against.

11. A definite growth in speed in typewriting is shown progressively throughout the grades. Also the older children consistently show improvement in making "fewer" errors in typewriting.

12. There was not sufficient data collected on the effect of the typewriting on other subjects to form any definite conclusions.

The results of the study made by Dr. Wood and Dr. Freeman found that in "grades 3-6 the partial correlation studies indicate that the influence of the classroom typewriter on the total Stanford Achievement Test gains was positive but small," . . . Taking the test results of both years, together with the other available evidence, it seems reasonable to

conclude that the typewriter can be used advantageously in most, if not all, of the subjects of instruction in the elementary school. There is fairly consistent evidence that the typewriter's influence on spelling is more favorable than on any other subject tested in the Stanford Achievement Test. A careful and detailed analysis of the speed and quality of the writing of the two groups failed to yield any evidence that the handwriting of the experimental group was any poorer on account of the use of the typewriter. . . . With informal practice and for children in the elementary school, there apparently exists "a natural" or grade typing speed limit which corresponds roughly to the speed of handwriting. . . . Between 70 and 90 percent of the teachers who had two full years of experience with the classroom typewriter judged that the typewriter had favorable influence on spelling, reading, and composition. Further study has been carried on by Miss C. Unsicker in the Horace Mann School and other situations on the relation between the typewriter and its influence on reading."

As a result of the study made by the author it appears that the typewriter is influential in developing the children's creative writing, does not affect handwriting detrimentally but appears to stimulate both quality and speed in handwriting, and has a minor influence on other subject matter in the classroom.

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THE PREDICTION OF SCHOLASTIC SUCCESS IN COLLEGE

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WHILE there have been some hundreds of papers on the subject of the prediction of scholastic success in colleges and universities, this paper offers some new[1] material. (a) It presents correlations of predicted scholastic success and actual scholastic success for a group of 500 students over their three or four years of college work; (b) it shows the scholastic outcome of those individuals who would have been discouraged from entering college by the use of this plan; (c) it compares for this group the results of the Jones formula for prediction of scholastic success with two other formulae that are used extensively; (d) it gives the prediction of scholastic success for men and women for this college; and (e) it presents a comprehensive plan of state-wide testing of candidates for the institutions of higher education in a state.

(a) The method of the tabulatory part of the work required the reduction to a common basis of the high school marks of all of the students included in the study.[2] Only those students were included who had taken all of their college work at Oregon State College and whose records were in every way complete for the purposes of this study.[3] This reduced the number of available cases to 382 students who were graduated at the end of the previous year and 138 students who had completed the work of the junior class at this same time. After the high school marks of this group had been reduced to a common basis and the American Council on Education Psychological Test scores had been obtained, a series of correlations between each of the six usual subject divisions of the high school curriculum was run with the composite college marks. The correlations showed the usual results, viz., that there was not enough difference among these several variables to warrant weighting them by subject-groups, i.e., no single subject-matter field seemed to offer a better indication of college scholastic success than any other subject-matter field. The high school

[1] No bibliography is attached because of the very great amount of material on this general subject.

[2] A table for the conversion of high school marks to a common and comparable basis with those of this College was made also, but it is not included in this paper. It may be of some interest that 27 systems of marks are used in the 268 high schools of Oregon.

[3] All data of this study are available by writing to either author.

marks are conceived to be indices of the industry of the pupils, but are not, of course, independent of intellectual ability. This ability is measured most satisfactorily at the present time by some standard intelligence test. It is reasonable to assume that a student's scholastic record will depend principally upon the two factors—intellectual ability and industry—and these are the basis of the Jones formula. A similar correlation was run between the American Council on Education (abbreviated as A.C.E.) Test scores and college marks, with the usual correlation results for such a measure. Out of these correlations the formula for the prediction of college scholastic success was developed.

The Jones formula is:

$$\frac{\text{Sum of means of high school marks in English, mathematics, social science, natural science, foreign language, non-academic subjects; and } \frac{\text{Score A.C.E.}^4}{100}}{\text{No. of variables in pupil's curriculum}}$$

An example of the application of the Jones formula would be the case of "Student A" who had a mean mark in terms of high-school quality points in English of 1.41, mathematics 1.15, social science 1.37, natural science (including chemistry) 1.29, foreign language 1.47, and nonacademic sub-

TABLE I

DEVIATIONS OF THE CUMULATIVE COLLEGE MARKS ACTUALLY OBTAINED FROM THE PREDICTED MARKS

	Graduate[1]	Seniors[2]	Combined
No. of cases	362	138	500
No. of minus deviations[3]	130	33	163
Mean minus deviation	.25	.26	.25
Greatest minus deviation	1.24	.98	1.24
No. of plus deviations[4]	226	101	327
Mean plus deviation	.39	.44	.40
Greatest plus deviation	1.42	1.44	1.44
No. of non-deviations	6	4	10
Mean predicted mark	1.70	1.73	1.71
Mean actual mark	1.51	1.49	1.50
Difference	− .19	− .24	− .21

[1]Students who were graduated the previous spring.
[2]Members of the senior class at the time the study was made.
[3]A minus deviation is one in which the actual marks received by the student were lower than the predicted marks.
[4]A plus deviation is one in which the college marks received by the individual were higher than the prediction.

[4] The score on the A.C.E. was divided by 100 to reduce it to a basis comparable to the mean marks made in the high school subjects.

jects 1.32. His A.C.E. score was 135, or divided by 100, was 1.35. His predicted college average mark, in terms of quality points, would be:

$$\frac{1.41 + 1.15 + 1.37 + 1.29 + 1.47 + 1.32 + 1.35}{7} \text{ or } 1.34 \text{ or } C+.$$

If he had not taken any courses in any one of the groups, the divisor of the fraction would have been six instead of seven. The conversion of the high school marks to quality points was made simple by the development of tables from which the quality point equivalents of any mark on any of the marking systems used in the different high schools could be read at a glance.

These predictions were then correlated with the cumulative college marks of the group for the 9 to 16 quarters of registration. A correlation coefficient of .65 ± .02 was obtained for the 500 students in the study.

Table I shows that the Jones prediction formula overestimated the scholastic probabilities of the group by a mean of .21 of a mark or quality point.[5] The standard deviations of the differences between the actual and the predicted college marks by successive quarters of registration were small, being largest in the first quarter and decreasing about .01 of a quality point each successive quarter. This indicates that the Jones formula applies slightly more accurately with each additional quarter of student residence. The reasons offered for the over-estimation of the Jones formula are: too high marks given in high schools, weak study habits developed in many students from small high schools, overemphasis in the College on extra-curricular activities.

(b) The ratio of the poor (scholastically) students who would have been barred from the College to the number of poor students who would have been admitted may be taken as another measure of the validity of the criteria for their selection. If all of the 500 students considered in this study, whose composite high school marks were less than 1.00 quality point, had been refused admission to the College, 47 or 9.4 percent would have been rejected. Of these 47, 20 or 43 percent actually received averages between 1.00 and 1.49 quality points; 2 or 4.3 percent made averages between 1.50 and 1.99; and only one made 2.00 or more.[6]

[5] Quality points are given at Oregon State College according to one of the common plans for the use of this device—3 quality points for each hour of "A," 2 for "B," 1 for "C," 0 for "D," and one subtracted for each hour of "F." There are no "E's."

[6] This case was one of personality difficulty that was corrected between high school and college. The difficulty was principally one of a marked feeling of inferiority and hyperemotionalism.

If an A.C.E. Test score of 80 or more had been required before acceptance for college registration, 66 or 13.2 percent of these 500 students would have been rejected. Of these 66, 42 or 63.6 percent made averages between 1.00 and 1.49 quality points; 12 or 18.2 percent made averages between 1.50 and 1.99; and none made averages of 2.00 or more.

(*c*) The predictive formula in use at the University of Washington (the Dvorak formula[7] and at the University of Oregon (the Taylor formula[8] was worked out for this group of students. The Dvorak formula is:

College scholastic success = the sum of means of high school marks of .0959 × English, .0157 × mathematics, .2464 × social science, .0977 × natural science, .1159 × foreign language, .0989 × non-academic subjects; plus .0022 percentile rank A.C.E. Test, plus constant .1700.

The Jones formula predicts college scholastic success more accurately ($r = .65 \pm .02$) than the Dvorak formula ($r = .59 \pm .03$) for this group. The Dvorak formula gives exactly the same correlation with the college scholastic success of this group as the composite high school mean does. The manipulation of the Dvorak formula requires about six times as much time as the Jones formula and is more subject to error due to the greater number of steps required and the larger numbers involved. The standard deviations of the differences between the predicted and the actual college marks by the Dvorak formula were .53 quality points.

The Taylor formula is:

$$\text{College scholastic success} = \frac{\text{Percentile of index of excellence}[9] \text{ plus percentile of A.C.E. score}}{2}$$

The Jones formula and the Taylor formula predict the college scholastic success of the group studied equally well. The correlation between actual and predicted marks by the Jones formula is .65 ± .02, and by the Taylor formula .64 ± .02. Both formulae require the same time for manipulation. The Jones prediction formula gives prediction on a quality point basis directly comparable with marks given at Oregon State College, while the Taylor formula gives predictions on a percentile basis which

[7] Personal letter dated September 15, 1932.
Brammel, P. R. "A Study of Entrance Requirements in the University of Washington." Unpublished doctor's dissertation, University of Washington, 1930, pp. 319.

[8] Taylor, H. R. Personal letter dated September 19, 1932.

[9] The index of excellence is the number of "A's" from the high school record on a converted or comparable basis according to the high school marking system used by the high school of the student's origin.

must be converted to a quality point basis to be directly comparable with the classroom marks of the University of Oregon.

(d) A study of the data showed that the scholastic averages of the 129 women students were significantly higher than those of the 371 men students for each quarter of the period studied. The average mark for the women included in the study was 1.62 ± .53 quality points. The average mark for the men was 1.51 ± .55 quality points. The women made a composite average of 1.92 in high school in comparison with 1.73 for the men. The standard deviation of .57 quality points was the same for both. On the A.C.E. Test the women made a mean score of 123 ± .46 in comparison with a mean score of 146 ± .55 for the men. When the combined high school marks and A.C.E. scores of the Jones formula were used, a correlation of .67 was obtained for the predicted and the actual marks of the men, and of .64 for the women with these same measures. This indicates that the men's actual marks are more nearly those which are predicted by the Jones formula than are the women's. Several postulated reasons might be given but they cannot be demonstrated definitely for this particular situation.

(e) A committee appointed by the administration of the Oregon System of Institutions of Higher Education has formulated a general plan that has been proposed tentatively, but has not yet been acted upon. This plan is the division of the State of Oregon into five districts to correspond with the five institutions and to give the A.C.E., or more popularly, the freshman entrance, tests to candidates for admission to the state institutions of higher learning in the central high schools of these districts in the spring. It is proposed that each institution give these tests in one district and that the districts be rotated among the institutions annually. The plan further provides that the high school records and the A.C.E. Test scores for these high school seniors be studied and that letters of acceptance or of discouragement be sent out to the seniors as early in the summer as possible. The advantages of this plan are that: (1) it prevents the emotional shock of demonstrated scholastic failure to some of the graduates of the small high schools; (2) it enables those who are rejected or discouraged from entering to "save their faces" in their communities by remaining away from college for reasons acceptable to the community instead of entering college and not being able to remain; (3) it saves the money the institutions would spend on the attempted education of those who cannot use it to best advantage; (4) it advises those candidates who are marginal what their chances of success are, at least approximately, so

that they do not enter blindly and without knowledge of the effort they must expend; and (5) it sets reasonable goals for those students who are of collegiate calibre so that they can be urged to do at least as well as other students of their same general ability and attainments have done in the past. The admission of any student who applies, even from an accredited high school, without regard for his probable scholastic success is not the best educational procedure.

The conclusions reached in this study are as follows:

1. College scholastic success can be predicted very satisfactorily from the high school scholastic average and psychological test score.

2. College scholastic success is dependent upon ability and upon industry. Prediction of college scholastic success must be based upon these factors if it is to be satisfactory. High standing in the intelligence test seems to be a prerequisite for success in college, but does not guarantee success. The psychological test score is an index of ability. The high school academic average seems to be an index of habits of industry.

3. College scholastic success can be predicted before a student enters college practically as well as it can be at the end of the first quarter.

4. The high school composite mark is the best single criterion for the prediction of college scholastic success.

5. The Jones prediction formula of college scholastic success yields equally accurate results for men and women.

6. In this study the size of high school from which the students came bears little relation to the college marks he made.

7. The students from the larger high schools made more nearly the predicted averages than the students from the smaller high schools in this study.

8. All students should have their actual scholastic accomplishment compared each quarter with their predicted accomplishment. They should be encouraged or given other special attention as the case requires.

9. A similar plan could be worked out for any state. Once the basic information tables were developed, a clerk could handle the work of individual predictions very quickly, easily, and accurately.

A STUDY OF CHANGES IN THE INTELLIGENCE QUOTIENTS OF SUPERIOR CHILDREN*

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THE investigation with which this paper deals is, in effect, an extension of the Harvard Growth Study. It was undertaken because Dr. Cattell discovered that the mentally superior children in the Growth Study, selected on the basis of the average of two or more I.Q.'s, showed a tendency to gain substantially in later tests.[1] This finding was contrary to the results reported by Terman in his study of gifted California children,[2] so we began to look for new light on the question.

A preliminary report was published last March,[3] and the investigation is still going on. The present paper is a report of progress.

This study is somewhat unique in that all the Binet examinations were given by a single individual, the writer. This introduces a control factor not present in most experiments of this type. The children come from three towns which for many years have made a practice of admitting to school children who are under the prescribed chronological age, provided they obtain a Stanford Binet mental age which equals or surpasses the chronological limit.[4] Thus the group is homogeneous chronologically within a range of less than two years.

First, we have a group of 109 children, 45 boys and 64 girls, with initial I.Q.'s ranging from 119 to 145. These cases were re-examined after intervals, ranging from five to eight years. The extreme changes in the group were a thirty-six point loss and a thirty-five point gain. In 38.5 percent of the cases there was a gain in I.Q. and in 57.8 percent there was a loss. Four cases made no change; 34.8 percent changed less than 5 points; and

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*A paper read before Section Q of The American Association for the Advancement of Science, at the Boston meeting, December, 1933.

[1] Cattell, Psyche. "Constant Changes in the Stanford Binet I Q," *Journal of Educational Psychology* XXII (October 1931), p. 544.

[2] Terman, L. M. *Genetic Studies of Genius, III* (Stanford, California: Stanford University Press, 1930), p. 25.

[3] Lincoln, E. A. "Preliminary Report on the Stanford Binet I Q Changes of Superior Children," *Journal of Experimental Education*, I (March 1933), p. 281.

[4] Lincoln, E. A. "The Later Performance of Under-aged Children Admitted to School on the Basis of Mental Age," *Journal of Educational Research*, XIX (January 1929), pp. 22-30.

59.6 percent changed less than 10 points. The median gain was 6.79 points, the median loss was 10.16 points, and the median change without regard to sign was 8.06 points.

A real sex difference appears in the data. Of the boys, 46.7 percent gained, with a median of 8.21 points, while only 32.8 percent of the girls gained, with a median of 5.36 points. On the other hand, 51.1 percent of the boys lost, with a median of 8.25 points, and 62.5 percent of the girls lost with a median of 11.54 points. The girls show about 14 percent fewer gains and 11 percent more losses than the boys. In size, the boys' median gain is about one and one-half times as large as the girls' median gain; while the boys' median loss is only seven-tenths as great as the girls' median loss.

Analysis of performances on separate tests discloses apparently significant differences in the special abilities of the groups of those who gain, lose, or remain constant within four points. A few examples only can be given. In test X-3, Copying Designs, the percentages of failure were 28.8 for the losing group, 10.5 for the constant group, and 3.8 for the gaining group.

In test XII-2, Abstract Words, the percentages are 80.0, 60.5, and 34.6.

In test XIV-2, Induction, the percentages were 68.9, 50.0, and 15.4 respectively.

In other tests no differences appear, as X-2, Absurdities, which practically everyone passed, and XVI-1, Vocabulary, which practically everyone failed, or XIV-3, Differences between President and King, in which about 82 percent of the pupils in each group were unsuccessful.

There appear to be some sex differences in the performances on separate tests. For example, in test XII-1, Vocabulary, the failures in the constant group were 13.3 percent for the boys and 56.5 percent for the girls.

TABLE I

SUMMARY OF CHANGES

	Five Year Group			Two Year Group		
	N	%	Median	N	%	Median
Boys' Gains	21	46.7	8.21	11	57.8	9.38
Boys' Losses	23	51.1	8.25	7	36.9	8.75
Boys' Total	45*	100	7.68	19**	100	8.75
Girls' Gains	21	32.8	5.36	15	45.5	4.75
Girls' Losses	40	62.5	11.54	16	48.5	6.00
Girls' Total	64*	100	8.46	33**	100	4.87
Total Gains	42	38.5	6.79	26	50.0	6.67
Total Losses	63	57.8	10.16	23	44.2	6.79
Total Change	109*	100	8.06	52**	100	6.25

*One boy and three girls made no change.
**One boy and two girls made no change.

In XII-4, Mixed Sentences, the failures in the losing group were 60.0 percent for the boys and 23.3 percent for the girls. In the gaining group there were no failures among the boys, but 18.2 percent of the girls were unsuccessful.

In test XIV-2, Induction, the failures in the losing group amounted to 53.4 percent for the boys as against 75.7 percent for the girls. In the constant group the percentages were 33.3 and 60.8 for the boys and girls respectively.

It must be noted that the numbers of cases upon which these separate test analyses are based were small. Some of the differences are so great, however, that it seems unlikely that they will disappear altogether with the addition of further cases.

A second phase of the investigation deals with a similar group of children who are being examined biennially. To date, there are 17 children who have had two re-examinations, and 52 who have had one re-examination. The latter group, composed of 19 boys and 33 girls, is large enough to warrant the presentation of some preliminary findings.

In the group as a whole there are 50.0 percent gains and 44.2 percent losses. There were 3 cases of no change; 42.3 percent changed less than 5 points; and 73.1 percent changed less than 10 points. The median gain was 6.67 points. The median loss was 6.79 points, and the median change without regard to direction was 6.25 points. The changes were not so great over the two-year period as over the five-year period, but they were substantial. There is also apparent a general tendency to gain in the two-year interval, whereas the tendency to lose was more marked over the longer time span.

The sex differences appear in this group much as they did in the other. Of the boys, 57.8 percent gained, with a median of 9.38 points, while 45.5

TABLE II

PERFORMANCE OF DIFFERENT GROUPS ON SEPARATE TESTS

Test	Percentages of Failure		
	Group Losing over 4 Points	Group Constant	Group Gaining over 4 Points
X–3 Designs	28.8	10.5	3.8
XII–2 Abstract Words	80.0	60.5	34.6
XIV–2 Induction	68.9	50.0	15.4
XVI–2 Fables	75.6	63.2	38.4
X–2 Absurdities	4.4	0	0
XVI–1 Vocabulary	100.0	97.4	92.4
XIV–3 Pres. and King	82.2	81.6	84.6
No. of Cases	45	38	26
Percent	41.2	34.8	23.8

percent of the girls increased their I.Q.'s with a median gain of 4.75 points. Losses were found in 36.9 percent of the boys' re-examinations, with a median of 8.75 points. Among the girls, 48.5 percent showed losses with a median of 6.00 points. Thus the girls made 12.3 percent fewer gains and sustained 11.6 percent more losses. The magnitude of the boys' median gain is about twice as large as the girls' median gain, and their loss is about one and one-half times as great as the girls' median loss. This latter finding is the only one which disagrees with the data of the larger group. It may be explained by the fact that three of the seven boys who lost dropped more than 15 points in the two years.

It seems fair to conclude on the basis of these results that over a period of five or more years, the I.Q.'s of superior pupils, selected on the basis of a single Stanford Binet test, drop substantially, and that girls lose more than boys. The re-examinations after a two-year interval suggest that this loss does not occur early in the school career. For further and more detailed information we shall have to wait until a more extensive body of data can be gathered.

THE RELATIVE EFFICIENCY OF THE JUNIOR HIGH SCHOOL vs. THE CONVENTIONAL 8-GRADE TYPE OF SCHOOL

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IN Syracuse, New York, as in other cities, questions have arisen relative to the efficiency of the junior high school type of organization in comparison with that of the conventional 8-grade elementary type of school. To answer these questions it is possible to make many different types of investigations.

Only two of these possibilities were selected in Syracuse for intensive study. First, it was determined to compare the achievement of junior high school pupils in the common integrating knowledge and skills universally recognized as one objective of the junior high school with that of pupils attending the conventional 8-grade elementary schools. Second, it seemed advisable to ascertain whether pupils trained in the junior high school type of organization show differences in habits, attitudes, and traits generally accepted as desirable, which are significant when compared with pupils trained in the conventional type of elementary school.

The *Terman Group Test of Mental Ability* and the *Stanford Advanced Examination*, Form W, were administered in twenty-six schools to all pupils completing the first half of the work of the 8th grade. These schools embraced four types of organization: one three-year junior high school comprising grades 7, 8, and 9, housed in a separate building; four nine-year schools, combining elementary and junior high schools in one organization; eleven 8-1 grades comprising parts of conventional 8-grade elementary school; and three junior high-school divisions of 6-year secondary schools.

Table I shows the results of the mental and achievement tests. The junior high-school divisions of the 6-year secondary schools excelled the other groups in both M.A. and I.Q., the 3-year junior high school ranking second. The junior high-school divisions of the combined elementary and junior high schools ranked third, while the conventional 8-grade elementary schools trailed in fourth place. In achievement the groups from the 6-year secondary schools ranked first, followed by the 9-year schools, the 3-year junior high school, and the conventional 8-year schools in order.

The achievement test scores were then broken down into their ten component parts. The junior high-school divisions of the 6-year secondary schools ranked first in all but geography. In this the conventional 8-grade schools as a group ranked first, but these same schools ranked lowest

among the four groups in six, including reading, language usage, literature, physiology and hygiene, and arithmetic. Only in spelling and arithmetic computation did they rise to second place. In this school system at any rate, the pupils of the junior high-school organizations tended rather consistently to excel in the skills and knowledges measured by this battery of tests.

TABLE I

MENTAL AGES, I.Q.'S AND ACHIEVEMENT OF 8-1 PUPILS IN FOUR TYPES OF SCHOOLS

Type of School	N	Mean of M. A.	P.E. of Mean of M. A.	Mean of I. Q.	P.E. of Mean of I. Q.	Mean Composite Score on Stanford Advanced Examination	P.E. of Mean of Composite Score
3-Year Junior High School	135	14.33	.073	105.9	.695	95.8	.454
Junior High School Divisions of 9-year Schools	335	14.22	.049	104.2	.516	96.4	.327
Conventional 8-grade Elementary Schools	546	13.73	.032	100.3	.396	94.5	.266
Junior High School Divisions of 6-year Secondary Schools	168	14.71	.066	108.4	.762	98.4	.476

But since these groups were not equivalent, a group of elementary schools was selected for comparison whose 8-1 pupils were as a whole equivalent in M.A. and I.Q. to the corresponding group in the 3-year junior high school which embodied all the features of a modern junior high school and whose principal represents a most progressive point of view. Each group exceeded the other in an equal number of tests. The junior high school group excelled in reading, literature, language usage, and physiology and hygiene, while the group from the conventional schools excelled in spelling, arithmetic, history and civics, and geography. Only three of the ten differences were statistically significant, viz., spelling, history and civics, and one phase of arithmetic—computation.

The second phase of this investigation involved a study of habits, attitudes, and traits of a large number of pupils in the Syracuse Central High School who had received their training in junior high schools and in 8-grade elementary schools of the conventional type. For this purpose the graphic rating scale for habits, attitudes, and traits prepared by Dr. Hardin Hughes of the Pasadena, California, Public Schools was used.

This scale as used here provided a rating on each of the following: Industry, Accuracy, Initiative, Reliability, Cooperation, and Leadership. The minimum and the maximum in each case were carefully defined. For

example, under Industry, the minimum was defined: "Works sporadically, seldom completes work, uses time injudiciously," and the maximum, "Works regularly and on time, habitually completes work, makes judicious use of time." Provision was made for several different ratings on each. The following instructions were printed on the card: "Keeping the definition of the trait in mind, rate the student between 'minimum' and 'maximum' by placing a check (x) appropriately on the line. Try to locate the student according to his standing relative to the average for his age. The check may be placed anywhere on the line."

Each teacher contacting a pupil in class, or in study, or in extra-curricular activities was asked to rate him in those traits in which he felt himself qualified to rate. From three to six ratings were thus secured for each pupil—usually on all of the habits, attitudes and traits. The mean of the ratings on each was then computed and a composite profile was prepared for each pupil showing the composite judgment of the teachers with whom he came in contact.

As far as the pupils could be identified by schools in which they had taken their seventh and eighth grade work the results were classified by schools and the mean and standard deviation for each school computed in each trait. Means and standard deviations were then computed for the junior high schools as a group, for the conventional 8-grade elementary schools as a group, and for each of the other high schools from which pupils had transferred.

This procedure was adopted on the assumption that during the years in the senior high school the various factors acting upon the personalities of the pupils were constant for all groups. The training in the kindergarten and first six grades was relatively uniform for the city. Differences which would be found might therefore be attributed to the school training of these pupils during the period immediately preceding high school entrance. Since both groups were selected from so wide a range of population it was assumed that the environmental factors affecting the groups would be approximately equivalent.

A comparison in Table II of the ratings of high-school pupils entering from the 3-year junior high schools contrasted with those entering from schools of the conventional 8-grade type revealed but one difference larger for schools of the conventional type, namely accuracy, and that difference was not statistically significant. On the other hand, it is interesting to note that in reliability, coöperation, and leadership, the differences are significantly larger for the junior high-school type, while in industry and

initiative the differences, though not significant, favor the junior high schools.

At this juncture it appears, then, that in those great significant life attitudes and habits of industry, initiative, reliability, coöperation, and leadership, the junior high school type of organization, at least as it functions in Syracuse, excels, and significantly so, the conventional type of school.

TABLE II

COMPARATIVE RATINGS OF SENIOR HIGH SCHOOL PUPILS IN HABITS, ATTITUDES, AND TRAITS. CLASSIFIED BY TYPE OF PREPARATORY SCHOOL

HABIT OR TRAIT	TYPE OF SCHOOL		Diff / P. E. of Difference
	Mean of Junior High School	Mean of Conventional 8-Grade Schools	
	N = 732	N = 375	
Industry	5.332	5.250	1.52
Accuracy	5.107	5.139	− .61
Initiative	5.016	4.873	2.86
Reliability	5.954	5.765	3.91
Coöperation	5.643	5.475	3.79
Leadership	4.772	4.591	4.14

A separate comparison of the ratings of 352 pupils entering from the 3-year junior high school was then made with those entering from 8-grade schools of the conventional type. But two differences were larger for schools of the conventional type, namely industry and accuracy. These differences were relatively large, but not significant. In initiative, reliability, coöperation and leadership, however, this junior high school excels the others; the difference in leadership was statistically significant and in reliability, it approached significance. The preponderance of differences favoring the junior high school, though not always individually significant, is, in cumulative effect, highly significant. Apparently, this school, with its broad curriculum, its freedom, and its emphasis on pupil initiative and pupil participation, is giving something highly valuable to its pupils, though at some loss of industry and accuracy.

It might be argued as a result that a compromise between the type represented by this 3-year junior high school and the other junior high schools might result in greater industry. But apparently schools of the conventional type with their great emphasis on the formal skills and knowledges result in more accurate work, at least as they function in Syracuse.

The results of this study are inconclusive. But it is evident that junior high schools with their broad curricula, their extra-curricular activities and their pupil initiative can do just as efficient work in the formal subjects of the curriculum as the conventional schools and possibly better, especially in reading and literature and language usage. At the same time, there seems to be a more significant development as a result of the junior high school training of the great life habits and attitudes of initiative, reliability, coöperation, and leadership.

THE RECOGNITION VOCABULARY OF PRIMARY PUPILS

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WHAT words shall be taught first to primary pupils? Several considerations must enter into our choice; but one of the first considerations is that of the words used most frequently by the child in his oral vocabulary before he is ever confronted with the printed page. Since the problem in developing a primary recognition vocabulary is to attach a visual symbol to a vocalization, it is reasonable to assume that the visual symbols can be attached most readily to those words most frequently vocalized. All word counts made by various investigators have dealt fundamentally with the question of where to work in this problem of attaching visual symbols to vocal sounds. Nor have these word counts been as helpful as they might have been due to the fact that they have failed to agree upon a basic primary vocabulary. If we choose the two of these lists most frequently used, the Horn List[1] and the Gates List,[2] and if we choose the first two hundred words of the Horn list as constituting a basic primary vocabulary, since that list was compiled upon the basis of frequency of use by kindergarten pupils, we are immediately perplexed by the fact that only one hundred twenty-three words of the first two hundred of the Horn list are also to be found among the first two hundred of the Gates list, this latter list having taken into consideration at least four factors other than frequency of use.

Instead of deliberating upon the question as to which is the better of these two lists, it would appear the practical thing to choose the words which appear among the first two hundred in both lists as constituting a basic vocabulary, as nearly as such a basic vocabulary has been determined by scientific procedure. As was said above, by actual count there are one hundred twenty-three words common to the first two hundred words of both lists. This irreducible minimum would seem to be our best practical answer to the question of where to work first in the matter of primary vocabulary. In choosing such a list we are prepared to face in two directions: (1) these are words with which primary pupils have the greatest spoken familiarity; and (2) they are also the words which the pupil will need to use in his subsequent reading. Evidence on this latter

[1] Horn, M. D. "The Thousand and Three Words Most Frequently Used by Kindergarten Children," *Childhood Education*, III (1927), p. 119.

[2] Gates, Arthur I. *A Reading Vocabulary for the Primary Grades* (New York: Bureau of Publications, Teachers College, Columbia University, 1926), p. 5.

point is afforded by the investigations of Wheeler and Howell,[3] who have set up a word list based on a count of words used most frequently in ten primers and ten first readers published since 1922. Of the first one hundred twenty words of this list, ninety-one are also in this combined Gates-Horn list. In working with this latter list the chances will be very great that we will also be working on the words which will be most useful to the child in his subsequent primary reading.

When the basic vocabulary had been decided upon, the next practical step was to find out to what extent it had been mastered by the primary pupils of a given school. This was to be a test of sheer visual recognition of these words in isolation unaided by context. Consequently, the words[4] were mimeographed in lists in lower case letters on a sheet of white paper, with a space at the top of the sheet for the pupil's name and half grade. The method of administering was for the teacher to call a pupil to her desk, and, after filling out the blanks at the top with the pupil's name and half grade, have the pupil point to the word and call it. If the pupil failed on the first trial he was given a second trial, but no more. If he failed on the first attempt but called the word correctly the second attempt, a single line was drawn through the word. If he failed in both attempts a double line was drawn through the word. His score was the number correct, counting halves. This sheet could be used as a diagnostic sheet, showing definitely words not recognized by the pupil. But it became possible also to tabulate the errors for each word for the entire group. This test was given to two hundred seven pupils of the primary grades of the George H. Thomas School, Chicago, in October, 1932. The pupils were distributed as follows:

Advanced First Grade—1A's	44
Second Grade	84
Third Grade	79
Total	207

Since many of these pupils come from homes in which only a foreign language is spoken, the school has afforded them about their only contact

[3] Wheeler, H. E., and Howell, Emma A. "A First Grade Vocabulary Study," *Elementary School Journal*, XXXI (September, 1930), p. 52.

[4] Actually only one hundred nineteen words were used. Two of the words, "A" and "I" were not used because they could not be given in lower case type, which it was necessary to use if certain facts of word configuration were to be brought out; two words, "are" and "snow" were omitted by mistake in checking until it was too late to get the data on them.

with the printed page. The constant comment of the teachers was: these pupils read better than their scores on this test would indicate, a comment which was to be expected since, as was indicated, the pupil was unaided by the context in recognizing these isolated words. Since we were testing sheer visual recognition, the cues to meaning supplied by context were lacking. Hence, we believed that such cues to meaning, as were afforded, would inhere in the words themselves; that a given word would thus constitute a perceptive unit, the recognition of which would depend upon the shape of the word, its configuration, the frequency with which it had been used, or even such remote factors as the emotional setting of the word as in the case of a word like "mother"; but in any event the word itself would be the unit independent of extraneous factors. This test of sheer visual recognition would have the further advantage of revealing quickly the context-reader, the pupil who depends very little upon word recognition, but much upon pictures and upon guessing from context the meaning of a given word. The median scores for each half grade are given below. These scores give but little indication of what might be expected from an extensive sampling of pupils of each half grade; they merely show what had been accomplished by a fairly efficient and capable group of primary teachers working with pupils who were none too promising. The median scores follow:

WORD RECOGNITION BY HALF GRADE—MEDIAN AND RANGE

Number of Pupils	Grade	Median	Range
44	1A	70	9–108½
43	2B	94	25–117½
41	2A	110	61–119
51	3B	114.5	66–119
28	3A	116.5	75–119

The next step of the investigation was to find the order of the difficulty of these words. We could very easily tabulate the number of errors for each word, that is, the number of pupils of the 207 who failed to recognize the word. This was complicated somewhat by our rule of allowing one-half credit for a word recognized only on the second trial. This accounts for the apparently absurd statement that a word was missed by 4½ pupils. Strictly speaking, the statement ought to be that the error counted against the word is 4½ out of the total possible errors of 207, this being

the number of pupils who could have missed the word. The words are given below in order of their difficulty from the one missed least frequently to the one missed most frequently. Strictly, it is a ranking upon the basis of non-recognition. Incidentally, this list, if presented to primary pupils in the order here given, affords a quickly administered and fairly accurate primary reading scale.

TABLE I

WORDS RANKED FROM EASIEST TO HARDEST WITH NUMBER OF PUPILS MISSING EACH

Rank	Word	Number Missing	Rank	Word	Number Missing	Rank	Word	Number Missing
1.	to	1	41.	milk	31½	81.	over	62½
2.	the	4½	42.	did	32	82.	back	62½
3.	mother	5½	43.	no	32½	83.	as	63½
4.	too	6	44.	me	32½	84.	went	63½
5.	and	6½	45.	big	33	85.	made	64
6.	see	7	46.	on	34	86.	sister	64½
7.	boy	8½	47.	down	35	87.	four	64½
8.	little	9½	48.	bed	36	88.	now	65
9.	tree	11	49.	day	36	89.	were	65
10.	one	13	50.	old	36½	90.	them	65
11.	can	14½	51.	at	58	91.	name	65½
12.	is	16	52.	blue	38	92.	new	67
13.	girl	16½	53.	by	40	93.	make	67
14.	in	17½	54.	am	41	94.	flower	67
15.	go	18	55.	an	41	95.	put	68
16.	he	18	56.	they	41½	96.	table	68
17.	we	18	57.	away	43½	97.	from	68½
18.	play	19	58.	school	44	98.	let	70
19.	man	18½	59.	like	44½	99.	his	70½
20.	two	19½	60.	him	45	100.	has	71½
21.	baby	20½	61.	door	45½	101.	sing	72½
22.	she	20½	62.	eat	45½	102.	white	74½
23.	for	21	63.	saw	45½	103.	when	74½
24.	up	22	64.	once	45½	104.	brother	75
25.	said	22½	65.	home	47	105.	long	77
26.	you	23½	66.	who	48	106.	time	79½
27.	not	24	67.	had	49½	107.	our	80
28.	it	24½	68.	out	49	108.	way	80
29.	come	24½	69.	of	50½	109.	any	80
30.	was	25½	70.	your	52	110.	hat	82
31.	my	25½	71.	her	53	111.	miss	84
32.	house	25½	72.	water	58	112.	got	84
33.	do	27	73.	have	58½	113.	any	90
34.	look	27½	74.	yes	59	114.	here	93½
35.	came	27½	75.	us	61½	115.	would	93½
36.	all	30	76.	get	61½	116.	off	95½
37.	good	30½	77.	this	61½	117.	bring	96½
38.	father	30½	78.	that	61½	118.	want	105½
39.	be	30½	79.	what	62	119.	train	121
40.	red	31	80.	give	62			

One thing is rather noticeable about this table: If we designate as an "interval of non-recognition" the difference between the number of pupils missing a word and the number missing the word next preceding it, we find the interval to be very small, about 1. The only exception to this is as follows:

INTERVAL OF NON-RECOGNITION	WORDS RANK
6	112 — 113
9	117 — 118
15½	118 — 119

This general situation is in sharp contrast to what might have been the case if, say, a group of words had been cut off from a group preceding it and from a group succeeding it by a wide interval of non-recognition. As this list stands, no one word is much more difficult than its predecessor in rank. This is probably added evidence of the basic nature of this word list. There is certainly no extensive group of words completely out of line as to difficulty.

We can set up a percentage of non-recognition for these 207 pupils in Table II:

TABLE II

PERCENTAGE OF NON-RECOGNITION

MISSED BY	WORDS RANK (See Table I)		
.05% – 10% of 207 pupils	1	to	22
10% – 20% of 207 pupils	23	to	56
20% – 30% of 207 pupils	57	to	80
30% – 40% of 207 pupils	81	to	110
40% – 50% of 207 pupils	111	to	117
50% – 60% of 207 pupils	118	to	119

We can interpret this table to mean that not more than ten percent of any primary group, grades 1A or better, ought to miss words 1 to 22, the twenty-two easiest words in Table I; that not more than twenty percent ought to miss words 23 to 56.

The next step in our investigation was an attempt to answer the following question: Are some words in this list intrinsically harder than others? Or is a given word missed more frequently than another simply because it has not been taught? It would certainly be true, at least in a beginning first grade, that many of these words would not be recognized because they had not been taught, or because pupils would not, as yet, have had enough drill in the recognition of them to fix them in mind. This same thing would also be true in the latter primary grades if the vocabulary presented had been a more extensive one. But for this basic vocabulary presented, as it was, only to primary grades from the advanced first through the third, the factor of non-teaching had been reduced to a minimum.

It was thought that the question of whether difficulty inhered in the word or in extraneous factors such as the extent to which it had been drilled upon, might be answered, in part at least, by the ranking of the words. That is, if we found that these words ranked, as they were above, in order of non-recognition were found to maintain that same ranking for the 1A's, for the second grade, and for the third grade, it might be as-

sumed that the difficulty inhered in the words themselves or at least in factors to which all pupils had been equally exposed. If the words tended to rank the same in order of non-recognition at a third grade level as at a first grade level, the evidence would tend to establish an ease or difficulty of recognition as a sheer perceptual process independent of other factors. This would be in line with the practical comments of experienced primary teachers that some words are easy to teach, and other words are hard to teach. It was thought that instead of computing a rank correlation coefficient a more definite picture of the extent to which these words maintain their same relative ranking from grade to grade could be given by dividing the words, as ranked above, into groups of thirty, four quartiles, taking words 1 to 30 from Table I to constitute quartile I; words 31 to 60, quartile II, words 61 to 90, quartile III; and words 91 to 119, quartile IV; then finding the extent to which words of quartile I remained in the first quartile for the first grade, the second grade, and the third grade; the same for quartiles II, III and IV. This computation was made and the results set forth in Table III.

TABLE III

GRADE DEVIATION FROM THE ORIGINAL RANKING

RANK OF WORDS ALL GRADES COMBINED		GRADE I Quartiles 1 2 3	GRADE II Quartiles 1 2 3	GRADE III Quartiles 1 2 3
Quartile I	1– 30	5–0–0	5–0–0	1–1–0
Quartile II	31– 60	7–2–0	9–0–0	16–0–0
Quartile III	61– 90	9–0–0	9–0–0	14–0–0
Quartile IV	91–119	5–0–0	7–0–0	5–1–0

A sample reading of the above table would be "Of the 30 easiest words for the 207 pupils of the three grades five deviated one quartile for the 1A's; none deviated more than one quartile. For the same thirty words, five deviated one quartile in the second grade, none deviating more than one quartile; and for the third grade one word deviated one quartile, and one word deviated two quartiles, none of the group deviating for the grade more than two quartiles." The shifting back and forth between the second and third quartiles is rather great, as was to be expected. This is especially noticeable in the third grade. Any average is difficult to strike, but it is a fairly accurate statement that fully 80 of these words remain in the same quartile's rank in difficulty regardless of the primary grade which attempted them. On the whole we are justified in the statement that these words are ranked in order of intrinsic difficulty.

The next step was an attempt to answer the question, why is one of these words intrinsically easier or more difficult than another? The first

of the hypotheses tested out was this: If a word is one frequently used by the pupil, that is one appearing extensively in his oral vocabulary, will it tend to be recognized more readily than one which does not occur so frequently? Can we best attach the printed symbol to the vocalizations to which the child is best habituated? It was thought that evidence on this point would be afforded by the following analysis: If we ranked the 119 words in the order in which they appeared in the Horn list (the Horn list being ranked in order of frequency of oral use by kindergarten pupils), and if we found our ranking which was made up on the basis of visual recognition by primary pupils to coincide in ranking with it, the evidence would point to a causal relationship. Again, instead of computing a rank correlation coefficient for the words, the words of each list were divided into quartiles, and the deviation computed, a procedure which gives a more vivid picture of the situation than a rank correlation.[5]

TABLE IV

DEVIATION BY QUARTILES FROM RANKING IN HORN LIST

WORDS IN ORDER OF EASE OF RECOGNITION		HORN LIST RANKED IN ORDER OF FREQUENCY OF USE BY KINDERGARTEN PUPILS			
	Rank	Same Quartile	1 Quartile Deviation	2 Quartiles Deviation	3 Quartiles Deviation
Quartile I	(1- 30)	17	7	5	1
Quartile II	(31- 60)	10	11	9	0
Quartile III	(61- 90)	9	16	5	0
Quartile IV	(91-119)	9	10	7	2

It was interesting to note that of the first thirty words, seventeen, or about 57 percent remain in the same quartile for both lists. For the remaining quartiles the percentage of retention will not average more than thirty percent. While we are justified in the conclusion that the frequency of oral use of a word is a factor in recognition of the visual symbol yet the relationship is not so high as we should like it to be. Certainly we cannot say it is the predominant factor.

The argument has been frequently advanced that some words are easily recognized on account of their vividness, such words in particular as lend themselves readily to dramatization. It was thought that an analysis upon the basis of parts of speech would throw some light upon this question. Explicitly, verbs might be thought especially easy to dramatize, hence easily learned, or certain nouns, such as "mother," or certain adjectives as "little" might have a vividness much greater than the more ab-

[5] The coefficient of correlation by the method of rank differences is $+ .39 \pm .059$.

stract parts of speech. Authors of primers who have gone so far as to base their entire system on dramatization of verbs might be pointed out as extreme examples of this theory of vivid presentation of action words. In computing this analysis the sum of all the errors for verbs was found and divided by the number of verbs, and so on for each part of speech.

TABLE V

RELATIVE DIFFICULTY OF PARTS OF SPEECH

	Number of Words	Average Missing	Percentage of Non-Recognition
Conjunctions	2	20.7	10.0
Prepositions	12	41.6	20.0
Adjectives	18	42.4	20.5
Pronouns	17	43.6	21.0
Verbs	33	44.9	21.7
Adverbs	13	47.7	23.0
Nouns	24	52.9	25.5

From the above table one can find little support for the point of view that, say verbs have a vividness which aids in their recognition on account of the opportunity they afford for overt and manual reaction to the printed symbol. The high percentage of non-recognition nouns also is interesting, especially in view of the contention at times set forth that nouns especially the concrete nouns can be taught best by simple association of the printed symbol with the object or the picture of the object. It is significant, however, in this connection that the percentage of non-recognition for the four abstract nouns in this list was twenty-nine per-cent as against an average of 25.5 for all the nouns. Those who advocate specialized methods of dramatization or symbol-object association may argue that these 207 pupils had not been taught by such methods, and if they had been so taught the results would have shown in the figures, an argument having much force. However, a word such as "the" which is impossible of any dramatization or picturization stands second in ease of recognition for the entire list. Frequency of oral usage, as set forth in the Horn ranking, would seem to be the determining element in the recognition of such words.

A further attempt was made to determine the effect of the length of a word upon degree of recognition. The number of pupils missing each two-letter word was totaled, and the sum divided by the number of two-letter words, the same for the three-letter words, and so on. Table VI gives the results in percentage of non-recognition:

TABLE VI

COMPARATIVE DIFFICULTY OF WORDS OF VARYING LENGTHS

Number of words in the group	21	43	41	7	6	1
Number of letters in the words	2	3	4	5	6	7
Percentage of non-recognition	14.0	18.6	22.4	37.0	17.8	36.7

Although the conclusions from the above data, especially for the five, six and seven letter words are doubtful owing to the fact that there are only seven, six and one words respectively in each group, yet we are justified in the statement, which is fairly well borne out by practical experience, that the shorter the word the easier it is of recognition. The notable exception in the above table is that of the six-letter words. The exception of the six-letter words can probably be accounted for by the fact that a six-letter word can be divided into syllables, that is, that the pupil can see little words in the big words. Added evidence on this point is afforded by the great difficulty of five-letter words which, obviously, are very difficult for the child to divide into syllables. A rather vivid index of the relative difficulty of short and long words may be had by simply totalling all the letters in the thirty easiest words and dividing the sum by thirty which gives us an average word length of 3.25 letters per word, whereas, if we do the same for the thirty hardest words we find an average length of 4.25 letters per word, the thirty hardest words being thus a full letter longer on an average than the thirty easiest words. Length of word is undoubtedly an important factor in recognition.

A further interesting angle was investigated. For example: Are certain words easier because there is in them a preponderance of letters easy of recognition? Tinker[6] at Leland Stanford has set up the order of legibility of lower case letters, an order which is found to correlate highly with other rankings. The first six most legible letters according to the Tinker list were chosen. They were k, d, q, b, p, m. It was assumed that if these were the six letters easiest of recognition that the thirty words easiest of recognition in this list might prove to be composed predominantly of these letters. Conversely, the hardest of the thirty words would prove to have in them few of these letters easiest of recognition, but many of the letters difficult of recognition. For example, g, e, i, n, s, l were the six letters most difficult to recognize according to Tinker's study.

As a matter of actual count the result was as follows: The thirty easiest words contained ten of the easy letters and thirty-six of the hardest

[6] Tinker, Miles A. "The Relative Legibility of the Letters, the Digits, and Certain Mathematical Signs," *The Journal of General Psychology*, I (July-October, 1928), pp. 472-496.

letters. For the thirty hardest words thirteen letters were of the six easiest letters, and forty-three were of the six hardest letters. In other words, the six easiest letters according to this classification were distributed about alike in both the easy and the hard words, and the six hardest letters were distributed about alike in the easy and the hard words. The ease or difficulty of recognition of the individual letters composing the words seems to have a negligible influence upon word recognition; the word, not the letter, is the perceptual unit.

A further analysis of these scores was made to determine the effect of the shape of a word, its configuration, upon the ease with which it is recognized. In order to make this analysis the 119 words were grouped into eleven categories. Each category was determined by the relation of ascending, neutral, and descending letters composing the word. By way of explanation, letters may be divided into three general classes: first, ascenders, letters extending above the line, such as d, b, h, l, f, t, k; second, descenders, those letters extending below the line, as g, j, p, q, y, z; and third, neutrals, those extending neither above nor below the line as, a, c, e, i, m, n, o, r, s, u, v, w, x. The assumption here made is that the configuration of a word is determined by the relation of these three general classes of letters in the word. Thus a word like "some" has a different shape from a word like "play," although both have four letters. "Some" is made up entirely of neutral letters, while "play" begins with a descender, and ends with a descender, but has an ascending letter in it. Since we knew the errors for each word it was easy to group all the words belonging in one category, add the errors and divide the sum by the number of words in the category times 207, the number of pupils taking the test. This gave us a comparable percentage of non-recognition for each category. A description of the categories with the percentage of non-recognition for each category is given in Table VII.

One of the most surprising features of this table is the comparative ease of the category: "Beginning and ending with neutrals and having neither ascender nor descender" for which the percentage of non-recognition was only 16.1.

The assumption has often been made that the cues to a pupil's recognition of a word are to be found in the upper half of the word, and in particular that a word has a "distinction" as a result of certain letters extending markedly above the line in the word. The comparative "ease" of the words composed entirely of neutrals would seem to cast serious doubt upon that assumption. But the "distinction" of such a word as

TABLE VII

CATEGORIES OF WORD CONFIGURATION FROM THE EASIEST TO THE MOST DIFFICULT

Rank		Percentage of Non-Recognition
1.	Words beginning with a descender, ending with a descender, but having one ascender, as "play"	9.2
2.	Beginning and ending with neutrals and having neither ascender nor descender as "an"	16.1
3.	Beginning with a descender and ending with a neutral as "go"	20.7
4.	Beginning with an ascender and ending with a descender as "by"	21.3
5.	Beginning with an ascender and ending with a neutral as "be"	22.2
6.	Beginning with an ascender and ending with a neutral, and having one other ascender as "the"	22.3
7.	Beginning with a neutral and ending with an ascender as "at"	23.1
8.	Beginning with an ascender and ending with an ascender as "had"	25.4
9.	Beginning with a neutral and ending with a neutral but having one ascender as "she"	25.5
10.	Beginning with a descender and ending with an ascender as "got"	26.1
11.	Beginning with a neutral and ending with a descender as "say"	28.5

"play" is obvious from the table. When we contrast the extremes of these categories, however, we are justified in the statement that some categories have an intrinsic difficulty far in excess of others, and it leads us to the practical suggestion that teachers ought to study word configuration with the idea of building up effective cues to recognition for each category. Perhaps the technique of Monroe, Fernald and others by which the pupil writes the word as he sounds it will combine both phonics and configuration in a profitable way.

Summarizing, then, we have from the foregoing analysis:

(1) A small but basic primary vocabulary.

(2) Words of this vocabulary ranked upon the basis of intrinsic difficulty of recognition, sheer perception unaided by context.

(3) Factors determining ease of recognition are:
   (a) Frequency of oral use, the greater the oral familiarity the better the chances of visual recognition.
   (b) Length of words, words containing few letters more easily recognized than longer ones.
   (c) Configuration of words as determined by the relation of ascending, descending and neutral letters within the word.

(4) Factors of little consequence are:
   (a) Presence or absence within a word of letters easily recognized, or those difficult of recognition.
   (b) Vividness of one part of speech in contrast with another.

THE SOLUTION OF A SPECIFIC PROBLEM IN REVISING A COURSE OF STUDY IN GEOGRAPHY

DAVID J. SWARTZ

THE last fifteen years have seen a movement in the field of education which has emphasized the scientific attitude and method in the solution of professional problems. In comparison with the extreme vitality with which this movement has progressed in its theoretical aspects, its practical application has lagged to an alarming degree. Persons concerned with the revision of courses of study seem generally to work on the basis that the scientific or objective attitude cannot be utilized.

The purpose of this article is to describe just one instance of many how a committee[1] on the revision of a course of study in economic geography for high school put to practical application the spirit of the scientific movement.

THE PROBLEM

For our purposes here it is needless to go into the work that preceded the specific problem. Suffice it to say that the committee faced the question: What industries of the United States should be incorporated in the course? Naturally, such further questions arose as: What are the chief industries of the United States? What are the most important sub-topics to be taught in each industry? What should be the basis in deciding the selection of industries—value of products? number of workers employed? utility? predominance in our own city? elements of vocational guidance? possibility of future employment? etc., etc.

THE SOLUTION

After considerable discussion the committee tentatively decided that the factors in guiding selection of the industries should be (1) the value of the products and (2) the number of workers employed. But this subjective conclusion had to be confirmed objectively and the next step was to interview a number of experienced business men, educators, social workers, and other intelligent individuals in various walks of life. Each was told the general reasons for the formation of the committee, the problem of the committee, and its provisional decision to select those industries ranking highest as to the value of the products and the number of workers

[1] Under the supervision of Mr. Nathaniel Altholtz, Director of Commercial Subjects, and Frederic Ernst, Assistant Superintendent, Board of Education of the City of New York.

employed. Each person interviewed was asked to criticize the decision of the committee and the conclusion unanimously reached was that the committee was right.[2] Thus, we see that at times subjective conclusions may duplicate the outcomes of objective procedure. However, we should take nothing for granted; we should always verify subjective conclusions with objective application.

The factors controlling the selection of industries being decided upon, the next step was to obtain the material with which to work. The information gathered by the United States Bureau of Census was used. Note that this material is widely and constantly employed by business firms, financiers, social workers, and others. However, to avoid wading through the great mass of material published by the Bureau, the committee cast about and found just what it needed on page 371 of the 1933 World Almanac—Big Manufacturing Industries in the United States in 1929—figures by the Bureau of Census, gathered in 1930. There were 120 industries listed, many more than possibly could be used by the committee. To insure the proper functioning of the principle of averages and the law of chance, all were considered in the future work.

The figures showed (1) the number of workers employed in each industry, (2) the amount of wages paid, and (3) the value of the products. Small filing cards were mimeographed with spaces on them for entering the name of the industry, the information given in the Almanac, and places for statistical entries. A card was filled out for each industry.

First the cards were reassembled in order according to the number of workers employed, placing the card with the greatest number on top and the card with the least on bottom. In the proper places the cards were numbered consecutively from 1 down to 120. Thus, for each industry there was information of the relative standing of the particular industry in respect to all the other industries, in the matter of the number of workers employed. The same procedure was followed for the amount of wages paid and, again, for the value of the products.

Soon the need arose for devising a single figure that would show the relative standing of each industry in respect to a combination of two or all three of these items. Hence, averages were computed for the three figures showing the relative standing of each industry according to the three factors mentioned and this information was also entered on the industry

[2] An article, "The Ten Industries Called the Biggest" by Hal H. Smith, appearing subsequent to the completion of the committee's work, shows further verification of this idea. See the *New York Times* of July 9, 1933.

card. Also, the figures of each industry showing its relative standing in respect to only the number of workers and the value of its products were averaged and likewise entered on the card of the particular industry.

Then the cards were all put in alphabetical order. A list was mimeographed called Tabulation No. 1, showing for each industry:

(1) the name of the industry
(2) the number of workers employed
(3) the relative standing of the industry in respect to the number of workers employed
(4) the amount of wages expended each year
(5) the relative standing of the industry in respect to the amount of wages paid
(6) the value of the products
(7) the relative standing of the industry in respect to the value of its products
(8) the relative standing of the industry in respect to a combination of (a) the number of workers, (b) the amount of wages paid, and (c) the value of its products—obtained by averaging the relative standings in each of these fields (cf. Nos. 3, 5, and 7)
(9) the relative standing of the industry in respect to only (a) the number of workers and (b) the value of its products—obtained by averaging the relative standings in each of these two fields (cf. Nos. 3 and 7)

The reader may object that the committee seemed to depart from its original decision to consider only two items: (1) number of workers and (2) the value of the products and considered, in fact, in addition to these a third factor, the amount of wages. This was done only as an additional check on its original decision and its further confirmation by the individuals consulted. It is interesting to note that there was a very high correlation between the two items of averages, i.e., Nos. 8 and 9 on Tabulation No. 1.

However, the committee found it difficult to work with averages. For example, the lowest average place in respect to the three factors was 3 (there was no 1 or 2), and this was held by two industries: (1) foundry and machine shop products and (2) iron, steel, rolling mills. Then there was a gap until average place 4.3 was reached. To overcome this difficulty and the unnatural situation of working with relative standings containing decimals, such as 4.3, a new listing was made, Tabulation No. 2. Both tabulations were alike except for columns 8 and 9 which, in Tabulation No. 2, were described as follows:

(8) shows the relative standing of the industry in respect to the number of workers, amount of wages paid, and the value of its prod-

ucts. These place figures were obtained by averaging the place figures for each industry as shown in columns 3, 5, and 7. The resulting averages, arranged in order from highest to lowest place, were: 3, 3, 4.3, 6.67, 7, 7, etc. These were given the following respective place numbers: 1, 2, 3, 4, 5, 6, etc. Where the averages for two or more industries were alike, the best place number was given to the industry having the best place figure in column 7.

(9) shows the relative standing of the industry in respect to only the number of workers employed and the value of its products. With the natural elimination of column number 5 in the computations, the procedure here was the same as in column 8. Where the averages for two or more industries were alike, preferential placement was given to the industry having the best placement in the averages for the three elements.

Still the results of this labor could not be utilized by the committee. The chief difficulty was that there were separate figures for industries whose characteristics were similar. For example, women's clothing and men's clothing were listed separately; motor vehicles, bodies and parts were separated from motor vehicles except cycles; butter, cheese, condensed and evaporated milk, and ice cream each had a separate listing, and so on. Hence, a third reorganization, called Tabulation No. 3, was made, with the following columns:

(1) lists the 120 leading industries grouped into units based on (a) similarity of manufacturing operations or interrelations of these operations and (b) possible unity of the teaching processes

(2) shows the relative standing (1 highest, 120 lowest) of each sub-industry in respect to the number of wage earners.

(3) shows the relative standing (1 highest, 120 lowest) of each sub-industry in respect to the value of its products

(4) shows the relative standing of each sub-industry in respect to only the number of workers employed and the value of its products. These figures were obtained by averaging the place figures for each industry as shown in columns 2 and 3. The resulting averages, placed in order from highest to lowest place, were: 2.5; 3.5; 6.5; 7.5, etc. These were given the following respective place numbers: 1, 2, 3, 4, 5, etc. Where the average places for two or more industries were alike, the preferential placement was given to the industry having the best placement in the averages for the three factors.

(5) shows the relative standing (1 highest, 35 lowest) of each UNIT INDUSTRY in respect to the number of wage earners.

(6) shows the relative standing (1 highest, 35 lowest) of each UNIT INDUSTRY in respect to the value of its products.

(7) shows the relative standing of each UNIT INDUSTRY in respect to both the number of workers employed and the value of the

products. The mathematics here was similar to that in column 4. Preferential placement was given similar averages according to the value of the products.

PRACTICAL USE OF THE STUDY

All this labor paid, for now the committee had an authentic list of the industries of the United States. If it found that it could use but two industries, it needed only to consult column No. 7 of Tabulation No. 3 and automatically select those unit industries marked 1 and 2 (textiles and automobiles). If it required three industries, it needed only add industry marked 3 (iron, steel, copper, tin sheet) and so forth. Furthermore, below each unit industry would be found the sub-topics, among others, that should be emphasized in the course.

The results accomplished by the committee in this one instance are not of sole benefit in the teaching of geography. A high school providing a major course in drafting found it desirable to prepare a course in theory called, Manufacturing Processes, the aim being to broaden the students' viewpoint in connection with their drafting work. It was only natural for the people concerned to grasp the value of Tabulation No. 3, especially so when they were told of the method of its construction.

SAMPLE OF TABULATION NO. 3

Because of the limited space at our disposal here, we show below only a part of Tabulation No. 3, having selected the ten major industries as revealed in column No. 7 of the original list. Note that this sample differs from the original in that the figures in column No. 7 appear in numerical order at the expense of placing column No. 1 out of alphabetical order.

1. UNIT INDUSTRIES	2.	3.	4.	5.	6.	7.
TEXTILES				1	3	1
Bags (not paper)	97	81	91			
Carpets, rugs (not rag)	52	78	64			
Cotton goods	2	11	4			
Dye., finishing textiles	26	37	28			
Rayon and allied	47	88	61			
Silk, rayon manuf.	15	28	21			
Woolen goods	33	52	36			
Worsted goods	23	32	26			
AUTOMOBILES				6	1	2
Motor vehicles, bodies, parts	7	9	6			
Motor vehicles except cycles	6	1	3			
IRON, STEEL, COPPER, TIN SHEET				5	2	3
Copper, tin, sheet iron work NEC	58	66	59			
Iron, steel, blast furnaces	67	29	43			
Iron, steel, rolling mills	4	3	2			

WEARING APPAREL				3	4	4
Clothing male, except work NEC	14	22	19			
Clothing women's NEC	12	8	10			
Clothing work, except shirts men	48	93	71			
Furnishing goods men's NEC	65	87	76			
Knit goods	8	23	16			
Shirts	32	64	42			
FOUNDRY AND MACH. SHOP PRODUCTION				4	5	5
Engine, turbines	100	38	66			
Fdry. and mach. shop prod. NEC	1	4	1			
Pumps and equipment	70	83	77			
Steamfit., heating appar.	46	65	52			
Stoves, ranges (not electric)	40	55	40			
WOOD PRODUCTS				2	8	6
Boxes, wooden, (not cigar)	56	94	75			
Furniture	11	20	15			
Planing mill prod.	22	31	25			
Lumber and timber prod. NEC	3	12	5			
PRINTING AND PUBLISHING				8	10	7
Bookbind., making	68	116	96			
Lithographing	82	104	99			
Print. and pub., book, job	13	16	13			
Print. and pub., newsp., period.	16	7	11			
Signs, adv. novelties	79	108	100			
FUEL, MFD.				16	7	8
Coke, not gas house	77	40	56			
Gas, manufactured	41	33	33			
Petroleum refg.	25	5	14			
CARS, R. R. AND ELECTRICAL				7	16	9
Cars and rep. R. R.	5	13	7			
Cars, elect. and R. R.	44	44	39			
SHOE AND LEATHER				10	14	10
Boots and shoes (not rubber)	9	19	12			
Boots and shoes cut stock	106	95	106			
Leather, finished	38	35	32			

NEC means not elsewhere classified.

TWO AIDS IN WRITING RESEARCH REPORTS

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1. *Numbering tables of a study while writing the report.*—The order in which statistical tables are computed almost never is the order of their publication. Accordingly, when dictating the text, which is always done in parts, and not in the final order of the book, one is at a loss how, effectively, to refer to a given table. If one refers in the text to "Table .. may be derived from Table .. by.....," later, when filling in the table numbers, he is at a loss to know which table is referred to, and in all probability will waste considerable time in determining the needed fact. If on the other hand he gives the table a numerical number, the numbers assigned almost certainly will not be the numbers which eventually will appear in the manuscript. Confusions arise even though one resorts to different colors of ink in order to attempt to reduce the confusion to a minimum.

The following scheme seems to be a means of overcoming the objections to the other methods which the author has tried:

1. Each table in the order of its computation is assigned a number, the first table being 1, the second table being 2, etc.
2. Let these numbers be labeled, however, by supplying a coded letter number, letters A B C D E F G H I, O, inclusive, standing for the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 respectively. The first table computed will be A; the tenth will be AO; the eleventh AA; the twenty-seventh BG; and so on.
3. Maintain these literal numbers on the tables until the book or publication is entirely completed, referring in the text to the tables by their letter numbers, and keeping for reference a summary sheet of such "table mentions" by page numbers.
4. After the manuscript is entirely completed, taking the above "mentions" sheet, correct both the tables and the text to a forward sequence of tables numbered 1, 2, 3, etc., in order of their appearance. This step should not be undertaken until the text is quite finished.

If O be made to precede A in sorting, the tables may be sorted into their order of computation at any time by sorting of the letters.

2. *Interleaving pages in a "finished" report by the decimal system.*—In connection with discussing the above, it may be useful to include a

discussion of a decimal method of interleaving a manuscript, found useful by the author. Cutting and pasting in the production of a research manuscript is inevitable. Let any additional page, inserted between two others, receive the number of the previous page plus one tenth (.1) additional, thus the first page inserted between pages 8 and 9 will be called page 8.1, the next following, 8.2, and so on. If it becomes necessary to insert an additional page between page 8 and page 8.1 the new page will be called 8.01; and the second following, 8.02. This scheme is much better than applying a number-letter system such as 8a, in which it is not perfectly obvious whether the *a* follows the 8 or precedes it, and also gives additional difficulty in connection with inserting pages between an original and a previous insert.

EDITORIAL

COÖPERATION NEEDED OF EXECUTIVE AND RESEARCH DEPARTMENTS

Time and time again the research worker in education has felt the need to determine what constitutes a valid organization of the subject matter of instruction to meet the needs of modern education. The basis for such a determination is to be found in the fundamental characteristics of the human mind and in the social purpose for common school education. The philosophers down through the ages have sought for these principles of thought and action and have validated a few with which the research worker may start his study of what application of these principles may be validated for use in the school situation. The following abstract indicates the relation of philosophic thinking to educational research.

> Abstract of a paper by George A. Brown, presented to Section Q of the American Association for the Advancement of Science —"The Evaluation of Philosophic Theories Underlying Modern Curriculums."

Recognizing Albert Einstein's statement "that knowledge cannot spring from experience alone, but only from the comparison of the inventions of the intellect with observed facts," some principles of modern curriculums are found (1) in John Locke's study of the growth of the mind as it receives objective experiences and recognizes relations; (2) in Locke's study of society as beginning with individuals rather than with the state, and as formed on the principle that "morality is the proper science and business of mankind"; (3) in Emmanuel Kant's "inner principle" that the two problems of securing knowledge and morality have but one solution, since real experience involves its constructive reorganization in harmony with the human law of good will; (4) in the combined principle given in John Dewey's definition;—"Education— is a process of continuous reconstruction of experience, with the purpose of widening and deepening social content, while at the same time the individual gains control of the method involved."

The modern curriculum should meet the pupil as a self-conscious person having reason and the ability to work for results, also as a personality

having direct experiences of ideals with other personalities and bringing into one process the reconstruction of experience under the control of social purposes common to mankind.

The experiment outlined seeks to evaluate the combined principles by discovering if the two possibilities for success are present to meet the questions:—(1) How far can pupils with the mental age abilities they have at each school grade gain control of the method involved? (2) How definitely can the curriculum subjects be so presented as to provide, "a process of continuous reconstruction of experience, with the purpose of widening and deeping social content?"

Such an experiment evidently will require the coöperative work of many able minds and many readaptations of material and wide checking of the conditions of teacher instruction. The following material presented in history is but a suggestion.

BROTHER JONATHAN

1. We Americans are a friendly folk with each other and not unfriendly with foreigners. By this I mean that it is not our habit to lord it over others by right of either abilities or birth above our neighbors. We learn from each other and from our own mistakes to be fellow citizens, and that means that we are busy together, each in his own way. We have a tradition that any one of us, at any time or place, appears most naturally in the simple garb of Brother Jonathan, the plain, straightforward American citizen.

2. At one time in our history, the immense unsettled continent of America was before our first settlers who came as English colonists. At that time, naturally, all felt loyal to the crown of England and to our common heritage of English culture and traditions of national life. When living in the pleasant countryside of the tight little British Isles, we of the common people had little concern with the national government itself. Sometimes the king's smile was sunshine to the land and at other times the frowning clouds of strife between the nations brought storms that, for a while, would cause some suffering. And again the jealousies of the great in the land brought the more serious whirlwinds of domestic conflict. But what could the common folk do about it? Apparently not more than they could do about the sunshine or the rains or violent storms of nature itself. But little control was possible to those that inherited little from the preceding generations who had occupied every foot of the land for centuries. With no feeling of re-

sponsible control in their government, however, the common people were free to discover how best to live as good neighbors among themselves.

3. Our folk in the American colonies sought for and found a new outlook for all of the people. Their first great interest was to form friendly unions with all who had like hopes for a society determined to secure the blessings of liberty. To be friends together requires that certain purposes for a common social welfare be a part of the plans and efforts of each. This means that each one uses his own abilities not only to establish himself in the community but also as one of its progressive citizens.

4. As the Colonies grew with many newcomers from the lands across the sea, our folk became many neighborhoods. A larger plan of social control was needed. In almost all of the colonies a government under a governor with authority from the king was necessary. The country might have become an extension of England with all of its entangling alliances with the more or less unfriendly European nations, if the royal governors had not acted more to please their masters in England than to help make Americans happy and contented.

5. Fortunately our folk were of the race of pioneers and a magnificent extent of unsettled country lay to the west. The ideal of a more perfect union between friendly neighbors, be they related families or neighboring villages or cities and counties of a state or a nation, was the ever growing interest and purpose of our pioneers. It was a long road through wildernesses of forests, treeless prairies, mountain-surrounded plains and through many a beautiful valley that our pioneers had to travel and settle, and again travel and settle, and yet again and again as they peopled this land. But always our folkways of neighborly association for the realization of comfortable conditions for all, maintained a healthy physical and social life. Independence for each individual while he contributed his abilities as needed to promote the general welfare, was our way to insure tranquil adjustment of ways to advance the purposes of union.

6. Justice was a watchword with our folk rather than an elaborate establishment for balancing accounts. As far as practicable we judged the whole situation for each individual, and justice was made light or heavy by the equity or balance of personal responsibility thought to be due under the conditions. Rough as life was in these pioneer days, the experiences of success in forming towns and states strengthened our purpose to secure the blessings of liberty through the ideals of union as a permanent possession for the nation.

7. From many efforts to work out successful self government of the people for the people and by the people, our experience discovered a necessary safeguard. As our folk sought to form a more perfect union, to establish justice and insure domestic tranquillity with a government able to provide for the national defense, to promote the general welfare, and secure the blessings of liberty for posterity, they came to realize that these ideals must be made the permanent control back of every act of all government. The power of these ideals must be found in the action of those purposes for more perfect union that are the crown of our long experience. The framers of the Constitution of the United States found a way to accomplish this by making a definite statement of the accepted purposes for human government itself, toward the attainment of which must be directed every law and act of government. This control by the accepted purposes was secured by establishing the Supreme Court and giving it the power to annul as unconstitutional any act contrary to these ends. By this veto power the purposes of union were preserved. These national ideals were kept always active, and only the people themselves could by constitutional amendment add to them. Thus the power to annul any act contrary to these ideals was secured to the people.

Brother Jonathan, simply by being everywhere present as the plain, straightforward American citizen, has this constitutional control of his government at all times.

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(1) In the first paragraph, who is named as the one who makes union and liberty possible?.....
What words describe him?.....

(2) In the second paragraph, the common people in the countryside of Old England are said to be left free only to do what?.....
Why did they have little concern with their national government?

(3) In the third paragraph, what is said to be required for folk to be friends together?.....

(4) In the fourth paragraph, what does it say might have happened to America if our folk had always accepted the governors sent over by the king?.....

(5) In the fifth paragraph, what does it say always helped to maintain a healthy social life?.....

(6) In the sixth paragraph, what is given as a watchword?.....
What strengthened our purpose for union?.....

(7) Explain in your own words how the safeguard, discovered by our pioneer folk, by which to preserve the purposes of union, is made effective in the Constitution.

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

PORTENIER, LILLIAN GERTRUDE. *Pupils of Low Mentality in High School.* Contributions to Education, No. 568 (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. viii + 109.

This is a doctor's dissertation from Teachers College dealing with pupils of low mentality in high school. After a general statement of the problem of increased enrollments in high school, Part I analyzes the data on intelligence of high school pupils, Part II discusses factors other than mentality among high school pupils, and the third section presents summaries and conclusions.

The data upon which the study was based were very sharply limited on account of lack of continuous records over a period of years on the same type of intelligence tests. Only two or three centers had such material available for a ten-year comparison. The need for a central clearing house for results of otherwise unpublished studies on distributions of data on mental measurement and allied topics is quite apparent from this discussion. The data which are presented tend to show a falling I.Q. of the groups entering high school in the past decade.

A report is offered in Table XIII on page 52 of the results of intelligence and various achievement tests between individuals of high and low intelligence. These comparisons show that in all phases of scholastic achievement the dull children were about three or four years retarded over the bright ones in the school subjects. This table shows that the dull children are approximately three years older in chronological age than the bright ones and, no doubt, if the chronological age could have been made equal the differences in achievement might have been more marked. It is interesting to note that the standardized tests show the differences between the bright and dull children, whereas teachers' marks frequently fail to take into account the differences in chronological age which exist in these studies. The data of Part II show that in general the pupils of higher intelligence also excel in superior home backgrounds and in constructive personality traits. Naturally, these factors tend to capitalize to better advantage the intelligence of the bright and the negative traits of the dull tend to lower the effectiveness of their limited intelligence.

There is some meager reference and implication that something should be done about all these conditions from the standpoint of education but very little is offered by way of suggestion. It would seem that the time is ripe for studies such as this which will carry investigation beyond the point of recording the *status quo* and point the way to a more constructive educational program.

HARRY J. BAKER
Detroit Public Schools

GESELL, ARNOLD, AND THOMPSON, HELEN. *Infant Behavior: Its Genesis and Growth* (New York: McGraw-Hill Book Company, 1934), pp. viii + 343.

This new book in a steadily growing list of studies on infancy issuing from the Yale Clinic of Child Development gives in detail the reactions of infants in twenty-five different situations for various age levels between four and fifty-six weeks. Typical patterns are the following: supine behavior, stair climbing, standing and walking, cube behavior, ring and string behavior, and form board behavior.

The sampling consisted of fifty-eight girls and forty-nine boys, but the present volume is not concerned with such matters as reliability, variability or relationships, but rather with a refined account of what may be considered the expected sequence of responses for infants exposed to controlled environmental conditions. As such it is a useful reference book, in that the items are recorded, not as discrete minutiae, but as part of a carefully conceived program of observation and analysis.

A portion of the book is given over to a theoretical discussion of Gesell's well-known position which places great weight upon the inner lawfulness of child behavior. While the present observations lend support to his views, perhaps it should be pointed out that these children represent a great heterogeneity genetically, but a relatively even and comfortable environment. Were some strenuous person to coach and train infants in a way analogous to Myrtle McGraw's work with preschool children, we might well be faced with radical alternations in Gesell's normative patterns.

But in delineating soundly a course of events which is likely to remain representative of infant behavior in a laissez faire (and probably desirably so) milieu, Gesell and Thompson, with the assistance of Amatruda and a staff of trained workers, have rendered an invaluable service to the young science of child development.

GEORGE D. STODDARD
State University of Iowa

CHANDLER, ALBERT R. *Beauty and Human Nature: Elements of Psychological Aesthetics* (New York: D. Appleton-Century Company, 1934), pp. viii + 381.

The chief aim of this book, the author declares, is to present some of the facts about aesthetic appreciation and artistic production. Questions of definition are therefore treated as briefly as possible, but much space is given to the results of psychological experimentation. As the author points out, no general survey of experimental aesthetics has appeared in English since the publication of Kate Gordon's *Esthetics* in 1909. The survey, he now provides, not only includes experimental work done in the intervening years but goes over the field in far greater detail than Gordon's elementary text attempted to do.

The first two chapters are in a general way introductory, indicating the method of the book, giving tentative definitions of aesthetic experience and of related terms, distinguishing between various kinds of art, etc. A chapter is then given to a review of experiments on the pleasantness of visual forms, from which it appears that individual preferences are too marked to leave tenable the supposition that there is some one best form, e.g., the "golden section," in each category of forms. In the light of the experimental findings, "only such vague criteria as moderation, simplicity, or comprehensibility retained any validity."

After a chapter on the expressiveness of visual forms, one is given to the results of experiments on the pleasantness of color. The author regards the work of Von Allesch as having the greatest authority on this subject, and concludes the chapter with the statement that although "preceding investigations had assumed that there was a basic agreement as to the pleasantness of colors and the harmoniousness of color pairs . . . Von Allesch

was convinced by his own experiments that this is a groundless hope." The impossibility of any hard and fast rules is, similarly, the conclusion reached by the author in the review he next gives of investigations into the expressiveness of colors: "The effects of color are never absolute but always relative to the total situations,"—a conclusion evidently in line with the general contentions of Gestalt psychologists.

In the three chapters that follow, on Architecture, Sculpture, and Pictorial Art, the reader is let off from descriptions of experiments and tabulations of their results. These chapters deal with such a variety of questions that a summarization of them is impracticable in the present short review.

The elements, the structure, and the expressiveness of music are then discussed at some length. Of especial interest in the experimental material dealing with the latter are the pages setting forth the effects of the repeated hearing of a musical composition. The author's remarks in the same chapter on the arbitrariness and essential irrelevance of the programs of "program music" deserve to be pondered by conductors and program editors as well as by many an innocent concert-goer.

After two chapters on the rhythms of speech and on language and literature,—in which also experimental results are largely drawn upon,—comes a chapter on talent and genius, in which are discussed various tests devised by psychologists to the end of measuring or predicting special abilities in one or another of the fine arts. The author concludes that "testing in the fields of art, music, and literature has not reached as high a degree of development as the testing of 'intelligence'," but nevertheless has some validity. The concluding two chapters, on the artist and his work, and on culture and appreciation, are likely to be among those most interesting to the general reader, to whom may be commended in particular the sections on criticism and on changes of taste.

In the preface, the author, in pointing out that the results of psychological experimentation in the field of aesthetics have been neglected by both philosophers and psychologists, mentions the present reviewer's elsewhere expressed opinion that those results, however interesting from the standpoint of the student of psychology, are nevertheless mostly irrelevant to the philosophy of art. After reading Professor Chandler's lucid and learned volume, the reviewer must confess himself still unpersuaded that familiarity with those results can be of much, if any, help either to the producer or to the "consumer" of works of art. The most he would feel ready to grant would be that, in the case of the art-critic, familiarity with the results of psychological experimentation in the field of aesthetics might serve to temper in some directions the dogmatism he not uncommonly exhibits.

At all events, the outline given here of the variety of questions dealt with by Professor Chandler will have made it evident that interest in his pages is certain not to be limited to students of psychology.

C. J. DUCASSE
Brown University

JONES, HIRAM A. *The Administration of Health and Physical Education in New York State.* Contributions to Education, No. 622 (New York: Bureau of Publications, Teachers College, Columbia University, 1934), pp. vi + 155.

The purpose of this study according to the author is "to present the trends and indicate their significance in the administration of the health and physical education program in New York State." He

states his problem in seven questions relative to the legal provisions, the effect of the rules and regulations of the Board of Regents on the state program, the evolution of the program, the function of the administrative personnel, changes in aims and objectives, intra-divisional functions exercised by staff members, and finally what reorganization is necessary for the most effective administration in the state school health and physical education activities.

The four divisions: Health Protection, Physical Education, Health Teaching, and Summary and Recommendations, are divided into fourteen chapters, followed by a bibliography of primary and secondary references.

The legislative changes are discussed in detail, and their effects upon the state health and physical education program are pointed out in each instance. In order to clarify the various trends, the origin and development of the separate bureaus, the type and number of the personnel, the services of each bureau, the coördination with other divisions of the State Education Department, and the shifting in aims and objectives of the health and physical education program are carefully considered.

The author reaches the following conclusions regarding trends in the administration of health and physical education in New York State: (1) the regard for health and physical education as an individual need, (2) medical inspection as a preventive and educative measure, including the examination and inspection of all pupils, (3) health protection as a follow-up, preventive, and reparative service, (4) health protection program developed to include "health examinations, follow-up services, communicable disease control, accident prevention, daily health inspections, first-aid services, special school adjustments, mental hygiene, building sanitation, hygienic school programs, and health service for teachers, janitors, and other school employees," (5) the purpose of the physical education program having become the development of health, social efficiency, and culture in the individual pupil, (6) an emphasis on intra-mural activities "with the individual needs of the pupils concerned as the determining criteria," (7) laws which allow freedom to school officials in the formulation of policies concerning programs and objectives, (8) an emphasis on sports, games, supervised play and similar recreational activities rather than on calisthenics, (9) the health teaching program stressing the development of desirable health habits, attitudes and knowledge rather than mere information relative to body functioning, (10) the legally prescribed course in health teaching dominated by the conception of "health as a way of living," and (11) health teaching regarded as integrated and incidental learning.

The author gives an excellent summary of the development of the health and physical education program in New York State. The recommendations of the author are in accordance with the accepted theories of health and physical education administration. The study should be of inestimable value to students of health and physical education in the state of New York and an excellent supplementary text for administrative courses in health and physical education in other sections of the country. The author has made a definite contribution to the field of health and physical education in this detailed study of the development of a program, and our only criticism is a noticeable lack of objective evidence to substantiate the criticisms made and the changes advocated.

LOWELL N. DOUGLAS
Baylor University

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Yearbooks of Departments of the N.E.A.—Of the twenty-four departments of the National Education Association, ten issue yearbooks. Four of these annual volumes consist primarily of the proceedings of departmental meetings. The other six deal with assigned topics. Four of these six are prepared with the general and technical assistance of the Research Division of the National Education Association, 1201 Sixteenth Street, Washington, D. C. They are sponsored by the Departments of Classroom Teachers, Elementary School Principals, Rural Education, and Superintendence. A brief account of forthcoming yearbooks of these four Departments follows. Information concerning the yearbooks of the Department of Social Studies and the Department of Supervisors and Directors of Instruction may be secured from the Department Secretaries, respectively, Bessie L. Pierce, University of Chicago, Chicago, Illinois, and James F. Hosic, 525 W. 120th Street, New York City.

Classroom Teachers.—The *Ninth Yearbook* of the Department of Classroom Teachers deals with teacher health. The yearbook committee is using previous studies and treatises on this subject and is making an extensive study of the health problems of teachers. This study surveys the opinions of about 6000 teachers, principals, superintendents, and school physicians with reference to teacher health and the factors related thereto. It also reviews what is being done to conserve and improve teacher health. Since the term "teacher health" is given a broad interpretation, the yearbook is concerned with all factors relating to the physical or mental well-being of teachers. The Chairman of the Committee in charge is Mary D. Barnes, 223 Summit Road, Elizabeth, New Jersey.

The *Tenth Yearbook* of the Department of Classroom Teachers will be prepared in coöperation with the American Educational Research Association, also a Department of the National Education Association. It will deal with the improvement of classroom instruction through the application of research findings. The Chairman of the Committee in charge is Myrtle Hooper Dahl, 312 South Eighth Street, Minneapolis, Minnesota.

Elementary School Principals.—The *Fifteenth Yearbook* of the Department of Elementary School Principals entitled "Personality Adjustment of the Elementary School Child" will deal with mental hygiene and child adjustment with special reference to the work of elementary school principals and teachers. Specialists in the field, as well as school principals, will contribute practical suggestions which can be used to advantage in every elementary school. There will also be a review of the studies in this field. The Chairman of the Committee in charge is Samuel Berman, Principal, J. R. Ludlow School, Philadelphia, Pennsylvania.

Rural Education.—The *1935 Yearbook* of the Department of Rural Education

entitled "Preparation of Teachers for Small Rural Schools" will be published in December, 1935. It is based on data available through the National Survey of the Education of Teachers, showing the status and trends in the qualifications of teachers in small rural schools and the practice in specialized training. It states the problems and issues involved in the training of rural teachers and makes recommendations concerning their solution. The Chairman of the Committee in charge is Mabel Carney, Teachers College, Columbia University, New York City.

The *1936 Yearbook* of the Department of Rural Education on rural school libraries will be available February, 1936. The following topics will be discussed: reading problems of the rural child, administrative control and financial support of rural school libraries, selection of books and other materials, the library and the curriculum, state school library supervision, and the responsibilities of teacher training agencies. Several questionnaire investigations have been conducted in order to obtain relevant data. The Chairman of the Committee in charge is Edith A. Lathrop, United States Office of Education, Washington, D. C.

Superintendence. — The *Fourteenth Yearbook* of the Department of Superintendence will be available in February, 1936. It is devoted to a consideration of the social studies curriculum. Subtopics treated by the various chapters include: the nature of society, the role of education and the school, the learning process, the status and trends of the social studies curriculum as reflected in a study of 2000 schools, selection of content, internal organization in the social studies, the utilization of community resources, reconstructing the social studies program in the local community, the teacher and classroom techniques, and evaluating outcomes. The Chairman of the Yearbook Commission is Charles B. Glenn, Superintendent of Schools, Birmingham, Alabama.

The *Fifteenth Yearbook* of the Department of Superintendence will probably be available for distribution in February, 1937. There has been a growing conviction among school administrators that the public is not well informed about school matters. It is the plan of the 1937 Yearbook Commission under Chairman Frank G. Pickell to compile a fundamental treatise in the general field of educational interpretation. According to present plans, this yearbook will not be just another volume on publicity and public relations, but will be concerned with fundamental questions of mass psychology and the formation of public opinion. The first meeting of the Commission was held in November, 1935.

Plans for the *Sixteenth Yearbook* of this Department are still indefinite. It is possible that the Commission under Chairman E. E. Oberholtzer will issue a report of studies in the field of youth problems.

American Youth Commission.—The depression years have brought many problems of their own and have renewed old ones for the youth of the United States. Despite the present worth-while accomplishments of many groups working with the situation, much more must be done.

In an effort to integrate and correlate present activities, to stimulate further attacks on the problem, and to make known to wider areas some solutions to many of the difficulties, the American Council on Education recently formed a Youth Commission composed of fourteen lay and educational leaders of which Newton D. Baker is temporary chairman, as reported in the November number of this department.

A few facts will help us to appreciate the problem the Commission faces. In the United States there are approximately 23,000,000 young people between the ages of 16 and 25. A few more than 5,000,000 of these are in attendance in the high schools and colleges, and, according to the 1930 census, nearly 11,000,000 are employed either full time or part time. Thus, there are 7,000,000 or more youths who are not in the schools, and are not employed.

What is happening to these 7,000,000 boys and girls? No study on a national scale has ever been made; hence the Commission hopes to coöperate with other agencies in making such a survey, for it feels that its problem is greater with this group than it is with children in school or in employment.

Each year society is faced with the problem of assimilating nearly 2,000,000 young people who seek employment. Unless demands for their services can be increased, what can be done?

In the month of January, 1934, there were registered in 36 states more than 100,000 destitute transients, and forty-seven percent of them were under 25 years of age. Of the total number of persons reported arrested in 1934, 114,233, or 37.5 percent, were under 25 years of age, and 15.1 percent were under 20. The largest number of arrests at any age were those at 19 years.

These representative problems and others must be met on a broad front. Conditions can be improved through the coöperative effort of large numbers of agencies and individuals.

At the first meeting of the Commission, two approaches to the study were suggested and approved. The Director was authorized first to determine: What *is* the youth problem? Of course it is known in a general way what the difficulties are, but it is believed that subsequent studies will be more valuable if the problem is better defined. Closely related is the second study, that of discovering the agencies working with youth, and classifying and evaluating their programs, with the idea in mind of suggesting where the gaps are and how they may be filled.

Beyond these preliminary studies, the Commission is not committed specifically, although if it is to integrate and make use of many excellent things now being done it must at least study, report, and make recommendations on the following:

(1) The characteristics of youth, and influences to which they are subject.

(2) The goals of our great educational system, and if necessary the formulation of a desirable set of objectives.

(3) The leisure-time activities of youth.

(4) The problems of secondary and general education in the rural districts. (Approximately two-thirds of all high school age pupils are in schools of an enrollment of one hundred or less).

(5) The vocational opportunities and needs of youth—the types of jobs they enter, the conditions of work and progress on these jobs, and the most effective and efficient methods of training needed in preparation.

While it expects to examine numerous experiments now under way, and to recommend tested results, the Commission will also conduct experiments of its own. It plans to emphasize the "action" part of the program as well as the research or survey part. Projects and demonstrations will be set up in various parts of the country, although it will be several months before this can be done.

The Commission is aware of excellent work being done by the schools, social agencies, and individuals, and hopes to pass on to the entire country the good things being accomplished. Furthermore, it expects to contribute much new information and to set up demonstrations that will help conditions among the young people. The Commission will appreciate the coöperation of all educational and social agencies, formal and informal.

This statement was prepared by the Director of the Commission, Homer P. Rainey.

Building America Committee.—At the annual meeting of the Society for Curriculum Study in February, 1934, James E. Mendenhall and Paul R. Hanna made a proposal to the Society for the preparation and publication of material dealing with current social, economic, and political problems. The Society was interested in developing such a project, and a committee was appointed with the following membership: Paul R. Hanna, Chairman, Stanford University; H. L. Caswell, George Peabody College for Teachers; C. L. Cushman, Denver Public Schools; Edgar Dale, Ohio State University; W. S. Gray, University of Chicago; Harold Hand, Stanford University; Jesse H. Newlon, Teachers College, Columbia University; Claire Zyve, Scarsdale Public Schools. James E. Mendenhall was selected as the editor of these Building America materials, and Paul E. Drost was chosen as the business manager.

During the first year members of the Society contributed out of their own pockets to get the work started. The Lincoln School of Teachers College, Columbia University, furnished the services of Mr. Mendenhall as editor and gave office space and equipment to the project. The Federal Government furnished twelve workers from relief funds. At the conclusion of the last school year, 1934-35, the General Education Board granted $15,000 for research and publication for the year 1935-36. With this combination of financial support the Society will be able to prepare issues on the following subjects: Housing, Food, Men and Machines, Transportation, Health, Communication, Power, Recreation, and Youth Faces the World. The Housing issue came out last May, and some 30,000 copies have been distributed to date. Starting with October this year one study unit will be issued each month. A teachers' guide is available for each issue. Each study unit devotes 28 pages to pictures and text, dealing with a cross section of the problem, some of the historic background, and a variety of proposals for next steps in the particular field treated. These materials are particularly designed for use in the secondary schools, but are found of equal significance for university, adult education groups, and subscription for home use. The editorial offices are maintained in the Lincoln School Building, 425 West 123rd Street, New York City. The materials are distributed through the Columbia University Press, Columbia University, New York City, on a cost basis. This project is distinctly a noncommercial, coöperative venture in which the Curriculum Society is attempting to make a contribution in a new type of study materials treating modern, social, economic, and political problems.

This information was provided by Paul R. Hanna.

Research in Educational Reconstruction.—The Committee on The Place of Research in Educational Reconstruction, recently provided for by the Executive Committee of the American Educational Research Association, has been organized

and is proceeding with deliberations regarding its problems. The committee includes the following membership:

Fowler, D. Brooks, De Pauw University.
James Bursch, Sacramento Public Schools.
Virgil E. Dickson, Berkeley Public Schools.
Paul Webb, Los Angeles Public Schools.
Clifford Woody, University of Michigan.
Jesse B. Sears, Stanford University, Chairman.

William G. Carr, Director of the Department of Research of the National Education Association and Secretary of the A.E.R.A., though not formally a member was present at the first meeting and will continue to participate in the work of the committee, the first meeting of which was held in Los Angeles on August 9th and 10th. At this meeting the assignment was considered in its various aspects and a plan for a report was tentatively outlined. A preliminary summary of the deliberations is now being studied by members of the committee. It is expected that at a later meeting the final form and substance of the report will be determined and a time for its presentation set.

The task assigned to this committee is not one of research; it is rather that of preparing a brief statement that may help to point the way for research to contribute toward the development of a constructive educational program looking toward the future out of the past. If the depression has broken the school, if the future program is to fit a changed society, it must be that there are some hard problems ahead for education to solve. It is with a view to ascertaining whether, and if so, how research might help to clarify the task, that this committee has been created.

It is expected that some statement from the committee, if not its formal report, will be available for the February meeting of the Research Association.

International Relations in Education.—For some years past the Bureau Internationale d'Education in Geneva has succeeded in establishing itself as a clearing-house of information throughout the world. The Bureau holds an annual meeting to discuss the progress of education, publishes reports of inquiries initiated at the request of its members, and issues an annual report which presents in statistical and descriptive form the progress of education throughout the world. The membership consists of representatives and delegates appointed by the Ministries of Education in the nations which have joined the Bureau. Because of its constitution the United States Office of Education cannot join the Bureau officially. The United States has, however, been represented at some of the annual meetings. In 1934 George F. Zook, President of the American Council on Education, attended the meeting and returned with the realization that a group should be organized in this country to serve as a clearing-house on problems of international education. At the same time James T. Shotwell also recognized the need of a group to which problems of a technical nature in the same field could be referred from the American National Committee on Intellectual Coöperation of the League of Nations, of which he is the chairman.

The result of the recognition which came from the two sources was the creation of the Committee on International Relations of the American Council on Education. At the first and only meeting held up to the present, on March 7, 1935, it was clear that the creation of this Committee is desirable and that the scope and

functions of such a Committee's activities could be limited in such a way as not to trespass on the program already undertaken and successfully conducted by other agencies in the country, such as the Institute of International Education, the Pan-American Union, the American Association of University Women, the United States Office of Education, and the International Institute of Teachers College, Columbia University, all of which bodies are also represented on the Committee.

The following are the members of the Committee: I. L. Kandel, Chairman, James F. Abel, Fannie Fern Andrews, Heloise Brainerd, Stephen P. Duggan, Paul Monroe, Kathryn McHale, William F. Russell, James T. Shotwell, and George F. Zook.

It is expected that in time the Committee will be able to undertake investigations referred to it from agencies interested in problems of international concern in education. The Committee at its first meeting considered and approved the preparation of a yearbook on *International Understanding through the Public School Curriculum*, under the auspices of the National Society for the Study of Education. Arrangements for the yearbook have been made and it will be prepared under the editorship of I. L. Kandel, to be submitted to the Society in time for its annual meeting in 1937.

This department is indebted to the chairman of the committee, Dr. Kandel, for the foregoing information.

The International Examinations Inquiry.—The Third Conference of the International Examinations Inquiry was held at Folkestone, England, on June 7-10, 1935. The Inquiry was initiated at the suggestion of Paul Monroe and is being conducted under the auspices of the Carnegie Corporation and the International Institute of Teachers College, Columbia University. The first Conference was held at Eastbourne, England, in 1931 and was attended by representatives from England, France, Germany, Scotland, Switzerland, and the United States. The discussions at this Conference, which have been published under the title, *Conference on Examinations* (Bureau of Publications, Teachers College, Columbia University, 1931), led to the conviction of the urgency of the problem of examinations and to the appointment of national committees of experts to conduct investigations into the problem. Reports of progress were presented by the Directors of the national committees at the Second Conference, held in London in July, 1933.

At the Third Conference, the final reports of the investigations conducted during the preceding four years were presented and discussed. The same countries were represented as at the previous meetings, with the exception of Switzerland, and the addition of representatives from Norway, Sweden, and Finland. A report of the Conference will be published shortly, and the results of the investigations will be published separately in the countries concerned. A number of reports have already been published. In addition to the *Conference on Examinations* already mentioned, the following have appeared: *An English Bibliography of Examinations; Atlas de l'Enseignement en France*, a translation of which was included in the *Educational Yearbook, 1934*, of the International Institute of Teachers College, Columbia University; *Schülerauslese* and *Some Aspects of Educational Sociology* in Germany; *The Intelligence of Scottish Children: A National Survey of an Age-Group* and *The Prognostic Value of University Entrance Examinations in Scotland;* and *Les Examens de*

Recrues dans l'Armée Suisse, 1854-1913 in Switzerland.

The Inquiry has already revealed the value and significance of a coöperative enterprise on a common problem when it is approached from the great variety of angles and points of view resulting from differences of cultural background. The Inquiry has already revealed that there is more involved than the problem of the technique of examinations and that as the investigations have proceeded they have inevitably raised a consideration of the fundamentals of education and the question of the selection and distribution of pupils and students. To Dr. Monroe and to the Carnegie Corporation goes the full credit for an experiment not only in education but also in international coöperation.

This information was provided by I. L. Kandel of Columbia University.

Achievement Examinations. — During the past fifteen or twenty years many organizations, as well as individuals, have been active in the attempt to state the objectives of educational effort, and in devising accurate means of evaluating such effort. Colleges and universities, state boards of education, teachers associations, and various examining bodies have all been at work. The result is a vast store of information, most of which never reaches those who are actually doing the classroom teaching and who, therefore, ought to be at the center of gravity of the whole movement.

About five years ago, the proposal was made that a volume could be prepared with the collaboration of a number of experts in the theory and practice of examining rather than by any one individual. In order to provide for the conferences and collaboration that seemed necessary for such an enterprise, an appropriation was sought and generously granted by the Carnegie Foundation for the Advancement of Teaching for underwriting the preparation of the book.

The forthcoming book on the construction and use of achievement examinations will be published under the editorial supervision of C. R. Mann of the American Council on Education, E. F. Lindquist of the University of Iowa, and Herbert E. Hawkes of Columbia University. The volume will consist of a chapter devoted to a definition of the major educational objectives in the various subject matter fields, followed by a careful consideration of the principles underlying the art of examination-making in each of the fields. Among those who have collaborated in the preparation of this text are the following: Howard R. Anderson, Algernon Coleman, F. P. Frutchey, John A. Lester, E. F. Lindquist, John A. Long, Harold Lundholm, Eugene R. Smith, and R. W. Tyler.

This volume is an attempt to bring to the attention of teachers and administrators, so far as can be done in so narrow a compass, a survey of the principles that lie at the basis of any system of examination-making that deserves the name, and to describe in some detail sound methods of test-making in the various subject matter fields.

The volume is aimed particularly at the needs of the classroom teacher in schools below the level of higher education and in the first two years of college. It is hoped that it will serve not only to assist the teacher in the actual process of producing examinations that will accomplish their purpose better than would otherwise be the case, but also to ground him in the objectives and principles that lie at the basis of examination-making.

The latter of these purposes is fully as important as the former. The task of

achievement test construction, as this volume should make fully apparent, has become increasingly technical and specialized in character. Few teachers can take the time, even though they have acquired the necessary technical skill, to prepare for themselves more than a small part of the examination materials required in instruction. More reliance must be placed upon the production of test materials by specially organized test-building agencies, such as the Coöperative Test Service and the various state and regional testing programs. The availability of expertly constructed materials, however, does not relieve the classroom teacher of the responsibility for becoming intimately acquainted with the procedures employed in good test construction, or of knowing in detail the desirable characteristics of a good examination. The classroom teacher must learn how to build good tests, not so much in order that he may construct his own examinations, as that he may make the most effective use of and best interpret the results obtained from examinations constructed by others.

It may appear that a considerable portion of the volume is devoted to the so-called new-type test, while the average teacher is more concerned with the setting of the more conventional style of examinations. Notwithstanding this apparent emphasis, it will be observed that the principles which lie at the basis of the entire treatment are applicable to all examinations, whether they be of the more common subjective type, or the comprehensive examination, or the new-type objective kind of test. Furthermore, the volume should serve the purpose of deterring many an enthusiast from attempting the construction of examinations which he has neither the time nor the technical training to prepare properly. The opinion is stated again and again that the task of preparing a set of new-type examinations which are valid and comparable is a matter demanding the rarest technical skill, and that if such examinations are desired they might well be purchased from those who are experts in their construction.

This statement was prepared by Dean Hawkes.

To Eliminate College Entrance Examinations.—To give opportunity for secondary schools to develop more effective programs of education, some two hundred and eighty of the leading American colleges and universities have entered into an agreement with thirty outstanding secondary schools, selected by the Progressive Education Association, to admit their graduates without examination and without prejudice with respect to their previous program of studies, until June, 1941. The only requirement is evidence that the candidate has the requisite general intelligence to carry on college work creditably, that he has well defined serious interests and purposes, and that he has demonstrated ability to work successfully in one or more fields in which the college offers instruction.

The success of this experiment from the academic point of view is practically assured. The pupils in these thirty schools are a highly selected group, they have been exposed to stimulating instruction, and they will be carefully guided into the appropriate colleges. Such pupils would probably make an impressive record in college no matter what they had studied in high school. From the research point of view, therefore, the success of the experiment rests upon the ability of the thirty schools to offer convincing, scientific evidence that the newer programs they have planned in terms of what they know about the needs and interests of

their own pupils are more likely to bring about desired changes in pupil behavior than the program heretofore imposed by college requirements. It also rests upon the ability of the schools to furnish more helpful, significant information about their graduates for admission and guidance purposes than the colleges can obtain from entrance examinations and from the entrance data now commonly used.

Both of these criteria imply a comprehensive, scientific evaluation program, but one evolved by the schools to suit their own purposes, not one imposed by an examining committee. The responsibility for recording, interpreting, and reporting changes in pupil behavior has, therefore, been left entirely with each of the thirty schools. They are assisted, however, by a Committee on Records and Reports under the chairmanship of Eugene Randolph Smith, Head Master of the Beaver Country Day School. This is a policy-forming committee; the active work of visiting the schools and assisting them in devising tests, record forms, and reports appropriate to their needs is carried on by a full-time, professional Evaluation Staff directed by Ralph W. Tyler, of Ohio State University.

Professor Tyler has initiated a four-point program of evaluation. First, the schools state their major objectives in terms of the important changes in the pupils' everyday behavior which they are trying to bring about. Second, they list the situations in the normal processes of school life in which progress toward the desired types of behavior might be observed. Third, they devise a reliable, economical, and meaningful record of pupil behavior in these situations. Fourth, they summarize, interpret, and report their findings to college admissions and guidance officers and to other persons who can use the information. The conclusions drawn from the record must be scientifically valid and accurate.

During the first year of the work of the Evaluation Staff, six committees were set up to devise new instruments for measuring some of the more intangible outcomes of progressive secondary education which were of common interest to the majority of the schools: sensitivity to significant problems, attitudes and interests, application of principles, interpretation of data, work habits and skills, and the many types of behavior which at present can be evaluated only through anecdotal records. Interested teachers from most of the schools participated, and about twenty new instruments of evaluation were tried out and put into operation in their schools. Many more are in the process of development, and the existing instruments of evaluation in these areas were widely studied and applied.

The work of these committees will continue until the instruments in the process of development have been completed. Then other committees will be formed, directed toward the evaluation of progress toward other common objectives of the thirty schools for which no satisfactory means of evaluation at present exists. In addition to the work of the committees, individual teachers who have promising ideas for new instruments of evaluation will be released from their teaching duties for periods of two or three weeks and brought to the headquarters of the Evaluation Staff in Columbus, Ohio, where they may devote their entire time to this work, having at their disposal a complete testing laboratory and technical assistance. Members of the Evaluation Staff will also continue to visit schools to help organize within each school a comprehensive evaluation program and to exchange ideas from school to school.

The idea of recording progress toward all the major objectives in which the schools are interested has had a stimulating effect upon the thirty schools. Far from hindering the work of teaching, this sort of evaluation is commonly said to have stimulated more fundamental thinking upon the effectiveness of teaching procedures than any other influence operating within the experiment. Heads of schools have come to realize the importance of an evaluation program not only in demonstrating the effectiveness of instruction but in heightening its effectiveness. It is hoped that before the conclusion of the experiment this evaluation program will yield incontrovertible evidence of the success of the newer programs of secondary education, and will furnish so much more significant and helpful information about candidates for admission to college that there will be no desire to return to college entrance requirements and examinations.

This information was provided by R. W. Tyler and P. B. Diederich.

Curriculum Revision in Virginia.—The Virginia Curriculum Revision Program, as conceived from the beginning (initiated in 1931) and at each stage of its development, has had as its major purpose the improvement of instruction. As the program progresses, this major purpose becomes more obvious to administrators, supervisors, and teachers and so emerges from an intensive campaign to reach a given objective, to a continuous program of improvement of instruction. Virginia teachers are coming to think of themselves not as being in the "new" or the "old" program or as in either the "experimental" or "regular" program, but rather as being in one of the various steps of the same broad program. It is much too early to attempt any conclusive evaluation of the extent to which instruction has been improved by reason of this program. The following brief account of some conditions which now prevail in the schools of the State seems to bear a close relation to the program.

I. Elementary Supervision

The number of counties employing full-time elementary supervisors has increased 75 percent since 1931, the year the curriculum revision program was initiated. Seventy-six of the one hundred counties in the State now employ one or more full-time supervisors. (Most of the cities of the State had supervision prior to 1914, at which time rural supervision was inaugurated.)

II. Teaching Materials

The amount of money expended for teaching materials increased in the State during the 1934-35 session, 242 percent over the amount spent the previous session and increased 305 percent over the 1933-34 session. The lack of teaching materials (supplementary books and other teaching materials) in the classrooms of Virginia, particularly in the counties, has continued a pressing problem for teachers. This phenomenal increase in the purchase of teaching materials has been realized during the last two years of the curriculum program's progress in spite of acute financial problems facing local school boards.

III. Subjective Judgment

Reports from superintendents, principals, supervisors, and from questionnaires sent to a random sample of fifteen hundred teachers, present subjective judgment, the consolidation and summarization of which follow:

1. Greater feeling of unity of purpose among superintendents, supervisors, principals, and teachers.

2. Increased interest on the part of teachers in professional growth and method.

3. Increased interest in and understanding of the child as an individual.

4. Increased provision for individual differences in the instructional program.

5. Increased interest and effort on the part of children.

6. Increased interest on the part of the pupil in recognition of and concern for *his* progress.

7. More coöperation and sharing—less competition on the part of pupils.

8. Mastery of skills strengthened in more meaningful relationship.

9. Increased use of environmental materials.

10. Recognition of the program by significant adult groups such as, Woman's Club, Parent-Teacher Clubs, etc.

IV. Measured Achievement in Tool Subjects

Otis Classification Tests administered in the spring of 1934 to a random sample of approximately eight thousand pupils (grades 4 through 8) show achievement ratios of children in the experimental program consistently above those in the control group for each of the five grades. One-half of the pupils tested were in the experimental year of the curriculum program. Pupils and teachers were equated in terms of the usual factors. The ratios follow:

	Experimental Group	*Control Group*
4th Grade.....	96	92
5th Grade.....	98	97
6th Grade.....	101	99
7th Grade.....	120	106
8th Grade.....	120	111

Indications of tendencies of these limited data, supplemented by more recent data involving approximately one hundred thousand pupils, show that the revised curriculum program is producing normal results in the tool subjects in all grades, and with increasing efficiency in the upper grades.

No measuring instruments of an objective nature have yet been developed to measure adequately the degree to which Virginia schools are achieving many of the major aims set for them in the revised program. A fundamental study in the field of evaluation is now under way in the State.

This information was provided by Sidney B. Hall, State Superintendent of Public Instruction.

New Florida Courses of Study. — In November, 1933, this department carried a news item on Florida's Curriculum Revision Program. At that time only the Course of Study for Florida Elementary Schools was available, which is a volume of over 800 pages, worked out coöperatively by the teachers of the state and the State Department of Public Instruction. It is an "activity" and "unit-of-work" type of course.

Since this elementary course was printed, the State Department has been able to make arrangements with the Rose Printing Company of Tallahassee, Florida, for the publication of the following high school courses of study:

Social Studies Course of Study for Florida High Schools, Vol. II, No. 2, Grades VII-XII (170 pp.)

English Course of Study for Florida High Schools, Vol. II, No. 1, Grades VII-XII (183 pp.)

Home Economics Course of Study for Florida High Schools, Vol. II, No. 7, Grades VII-XII (200 pp.)

Commercial Course of Study for Florida High Schools, Vol. II, No. 9, Grades VII-XII (93 pp.)

Foreign Languages Course of Study for Florida High Schools, Vol. II, No. 5, Grades VII-XII (142 pp.)

These high school courses also have a "unit-of-work" organization similar to the plan of the Elementary Course of Study. This is rather a new departure for the high school, but the teachers of the state are making extensive use of the courses of study and seem well pleased with this plan.

These courses were not written by a group of supervisors, but are the products of Florida teachers themselves, working under the direction of a member of the staff of the State Department of Public Instruction, and with the consultant services of Doak S. Campbell and Hollis L. Caswell of the Division of Surveys and Field Studies of George Peabody College for Teachers.

The State Director of Instruction and of the Curriculum Revision Program is M. R. Hinson, who prepared the foregoing statement.

Minnesota Projects.—During the past school year, the following three additions to the secondary school curriculum were made by the State Department of Education: Bulletin No. A-2a, ***Social Studies for the Eighth Year***; Bulletin No. BC-2a, ***Social Studies for the Tenth, Eleventh, and Twelfth Years***; Bulletin No. C-9, ***The Effects of Alcohol on the Human Body, Character, and Society.*** Pending the later complete revision of the course of study, the social studies bulletins were prepared to bring the existing course more nearly up to date by means of supplementary pamphlets. Bulletin No. C-9 was prepared in accordance with the law passed at the special session of the legislature, January 5, 1934. The purpose of this course is to provide teachers of the secondary schools of the State with specific suggestions for giving instruction to pupils in the effects of alcohol upon the human system, character, and society.

In March, 1935, a study of teachers' salaries for the school years 1928-29, 1931-32, and 1934-35 was prepared by the Statistical Bureau. This study was stimulated by numerous requests for salary information and was sent out to all public-school officials as an aid in determining teachers' salaries in Minnesota for the school year 1935-36. In this study are presented median salaries of superintendents, high-school principals, secondary-school teachers, and elementary-school teachers for each of the previously-mentioned three years. These data are presented by classification of school, by major training for the secondary teachers, and by grades taught for the elementary teachers.

In April, 1935, the Statistical Bureau prepared a summary of textbooks in use in Minnesota public schools. This summary contains information relative to the number of graded elementary and secondary school districts furnishing free textbooks, per pupil costs for textbooks, and copyright dates of textbooks in use.

For the past three years, a study has been prepared on the status of high-school graduates one year after graduation. These studies contain information relative to the number of high-school graduates who continue their education the year following their graduation, the number who are employed, and the number who are unemployed. The summary for the June, 1934, graduates is now ready for publication.

A study of teacher turnover is prepared annually, with the coöperation of graduate students at the University of Minnesota, to provide information relative to supply of and demand for teachers in the Minnesota public schools. The report for the school year 1934-35 also contains information relative to the years of training and the years of experience of the teachers employed in the Minnesota public elementary and secondary schools.

The Department of Education coöperated with the State Planning Board in

preparing the *Report of the Committee on Education* of this Board. The purpose of this bulletin is to give a picture of the various educational activities in Minnesota.

The annual summary of secondary-school enrollments by grades and classification of school has recently been completed for the school year 1934-35.

The following studies are now in the process of investigation:

a. A report on the school bonded-indebtedness situation in Minnesota.

b. A summary of the enrollment of high-school pupils by subject. (This study is being made in coöperation with the United States Office of Education.)

c. An experiment relating to class size. (The subjects for this experiment are three classes in business relations and occupations in the Bemidji, Minnesota, high school—one class of one hundred pupils and two classes of thirty-five pupils each.)

d. A follow-up study of certain seventh-grade pupils, both rural and graded elementary, in eleven selected counties, based on State Board examinations.

e. Throughout the year graduate students of the University of Minnesota are assisted with thesis problems that are suggested by members of the Department. These studies relate to finance, teacher turnover, teacher preparation, State Board examinations, transportation, and survey of local schools. When a thesis is completed, a copy is filed in the State Department of Education. Thesis problems now being prepared (titles not exact) are:

1. A comparison of the errors made on the English, Eighth Year, 1934 State Board examination in rural and graded schools.

2. An analysis of the Arithmetic, Eighth Year, State Board examinations since 1900.

3. A number of surveys of counties and local school districts.

4. Cost studies of consolidated school districts.

5. High school graduate studies for certain institutions from the beginning of the high school to the present time.

The director of the Statistical Bureau is T. J. Berning, who prepared this report.

Arkansas Projects. — The activities of the Division of Information and Research, State Department of Education, Arkansas, for the first three months of the year were chiefly concerned with the preparation and extension of the legislative program of the State Department. The outstanding result of the legislative session was the enactment of a two per-cent retail sales tax with 65 percent of the net proceeds accruing to the State Common School Fund.

The Division has also installed a complete system of cards for the 3,150 school districts of the state, showing complete details of child and financial accounting for each district.

In coöperation with the Division of School Law and Finance, the Division has recently developed regulations for the State Equalizing Fund which is now active after a lapse of five years. The two divisions have made analyses of the financial condition of numerous districts and have tentatively approved over 450 districts for aid. The Division will coöperate in the administration of the fund.

At the present time the Division has pending a W.P.A. project, which if allowed, will provide for ascertainment of the number of homesteads in the state, distributed according to their assessed valuations. This information will be used in connection with proposed legislation which would exempt homesteads from taxation.

The Division has rendered considerable assistance to the Division of Certification

and Teacher Training in the preparation of two bulletins issued in October as a guide for teachers in the curriculum development program. The Director acted as editor for the bulletins which were prepared for elementary and secondary school teachers, respectively.

The Director of Information and Research is Crawford Greene.

Delaware Projects.—The Delaware Department of Public Instruction is interested in a problem which is being studied by a former rural supervisor who is now taking graduate work. In this he intends to determine the factors which contribute to the success or failure of pupils who upon completion of the elementary grades in a small school enter a large school for the higher grades. The schools and pupils to be studied are in Delaware and many of the data used by him will be cleared through the office of the State Director of Research.

In addition to the preparation of the reports concerned with the fall and spring testing programs, the mental ability of pupils in grades 5 and 6, compilation of statistical data on teacher qualifications, salaries, enrolments, etc., the Director of Research is attempting to assist the teachers in the junior high school to improve the reading ability of the pupils in these grades. To this end reading tests were administered last spring, the results of which will be the basis for the remedial program contemplated.

The school register will be revised during the year. In doing this, every attempt will be made to incorporate in it the many items now on a number of single reports which are required by the various departments.

If time is available another problem which should be of interest to the teachers of the State will be attacked. This is a study and analysis of the results of the tests which have been given during the past ten years. The results of many of these are available and since a number of the tests have been repeated, a comparison in achievements for various years may be made.

The Director of Research is R. L. Herbst.

Research in Louisville.—The Bureau of Research of the Louisville, Kentucky, Public Schools, is newly organized for its variety of tasks. With three assistants in research, one has been assigned to carry on the group testing programs, one to carry forward work in individual diagnosis and adjustment, and one to take the major responsibility for administrative research.

The director of research, in addition to supervising the general activities of the Bureau, is directing the study program of the curriculum cabinet which is working toward the formulation of a philosophy and the adoption of policies upon which may be projected a city-wide curriculum program embracing both study and production.

The customary city-wide programs are continuing, the following group tests being given in each grade each semester: 1B and 1A intelligence tests; 6A achievement and intelligence tests; 8A and 9A reading, mathematics, and English tests; 10B intelligence tests; and 11B reading and spelling tests.

In coöperation with the supervisor of intermediate grades and a committee of teachers, a test in reading has been developed for the fourth, fifth, and sixth grades during the past year, and will be administered to the pupils of those grades. This year, as for the past several years, the Bureau has coöperated with the supervisors of the primary and intermediate grades in a spelling survey in all grades from 1A through 6A.

The Bureau is continuing to aid in the development of suitable materials for in-

struction and the adaptation of instruments of measurement for proper evaluation of the work of the sight-saving classes. As a continuation of a two-year vocabulary study, the Bureau hopes to adapt instructional materials to the reading ability of slow junior high school pupils.

Approximately three hundred pupils are studied individually each year by the Stanford revision of the Binet, the Herring revision of the Binet, or the Arthur point-scale of performance tests. Frequently both verbal and manipulative tests are administered to the same child so that the understanding of his abilities and difficulties may be more complete. Exchange of records is carried on with other community agencies primarily interested in problems of child welfare and placement. The reports of visiting teachers about the home situations are a great aid in the individual diagnosis and study.

The Bureau completed a study of salary schedules and had the pleasure of assigning positions to all teachers for the present school year on the new schedule adopted in July, 1935. During the present year it will be necessary to devise an accounting form that will aid in the continued assignment of teachers to their proper places on the schedule, and to develop a teachers' handbook interpreting the schedule.

A study of pupil personnel records is being undertaken to discover unnecessary duplications, overlappings, inadequacies, and inconsistencies in our present system of child accounting, looking toward the development of a simplified, accumulative record for the pupil which will be of maximum value and within the range of administrative expediency.

A study of instructional materials and supplies is planned to assure as far as possible that teachers may have the type of materials they most desire for their work, and still allow the schools to operate within the budget.

Routine studies of age-grade and grade-progress status will be continued. Studies of class size at all school levels and of room utilization at the secondary school level have become routine.

It is expected that the Bureau will prepare certain types of material for general publicity. A two-page spread for a yearbook to be published by the city has already been completed.

The director of research is J. E. Brewton, who prepared this statement.

Attitudes. — The development of generalized attitude scales has made possible the measurement of attitude toward many attitude variables with a single scale, thus greatly reducing the cost of constructing scales. This has made research in attitudes much more feasible than was formerly the case. (See Remmers, H. H., and Others, *Studies in Attitudes—a Contribution to Social-Psychological Research Methods, Studies in Higher Education XXVI, Bulletin of Purdue University*, Vol. XXV, No. 4, December, 1934.) Scales for measuring attitudes toward the following attitude objects are now available for general distribution.

Any High School Subject
Any Home-Making Activity
Any Play
Any Practice
Any Proposed Social Action
Any Racial or National Group
Any Social Institution
Any Teacher
Any Vocation

Research in this area is timely in view of the growing recognition of the importance of attitudes as educational outcomes. Indeed, the effective measurement of attitudes would seem to indicate a new program of validation for educational content and procedures.

The research in attitudes to be carried on at Purdue University will concern itself with the general problem of genetics of attitudes, i.e., with the general problem of what makes and unmakes, or shifts attitudes. The aim will be to experiment with a variety of content and media of communication in these experiments.

If individual readers of the *Journal* have specific attitude problems which might be fitted into the general program of research, H. H. Remmers of Purdue, who provided this information, will be glad to coöperate.

Supervised Correspondence Study.—In the fall of 1931 the Carnegie Foundation for the Advancement of Teaching and the Carnegie Corporation granted the University of Nebraska a $5000 subsidy for "developmental and experimental work in supervised correspondence study." Previous to this time investigation at the University of Nebraska had been carried far enough to disclose a number of problems which had to be solved if supervised correspondence study were to be particularly valuable as a means of enrichment in smaller high schools. Chief among the problems were: (1) the development of courses which embody pedagogical techniques suited particularly to the conditions under which supervised correspondence courses are used; (2) a determination of just what purposes these courses could best fulfill and how they should be administered in the local school; (3) the development of the type of organization that should be set up in the correspondence center; (4) the formulation of a functioning guidance program with which to insure the proper use of enrichment courses.

Two years later the original grant was supplemented by another of equal size. This assistance from the Carnegie Foundation and the Carnegie Corporation with other funds derived from income and from University appropriations have made it possible, under the able management of Earl T. Platt who is in direct charge of the program, to bring it to a self-supporting basis aside from certain staff appointments maintained by the regular University budget.

Distinct progress has been made in arriving at the objectives sought. It is felt that the first objective, that of providing proper courses, has been substantially achieved. Approximately eighty semester-courses are now available, each of which incorporates in large measure the types of teaching which theory and practice have proved to be most satisfactory in correspondence work. Other courses are in preparation, so that the number available in the near future will be greatly increased. Considerable progress has been made in developing techniques of administration to be employed in the local school. An efficient organization, alive to pupils' individual needs, has been built at the correspondence center which is, in this case, the University Extension Division.

The organization is now devoting a large share of its attention to the development of a guidance program which will enable the school to discover what courses the individual pupil needs. It is anticipated that the University must extend aid in the collection of certain data and in interpreting some of them. To set up a coöperative relationship between the University and the local school in carrying on the guidance program is entirely in keeping with the belief that smaller schools should look to coöperative effort among themselves and with some state-wide organization, if they are to maintain the sort of an educational program the communities have a right to expect.

Supervised correspondence study is being used this year more widely than ever. More than one hundred schools in Ne-

braska are enlarging their curriculum by this method. Approximately five hundred schools are served by the Extension Division of the University of Nebraska and by Extension divisions in other states that obtain their courses from the University of Nebraska. South Dakota is served through the Nebraska Extension Division. The University of Colorado and North Dakota State College are obtaining the courses from Nebraska and are supervising them from their own institutions.

One of the fortunate elements in the Nebraska program of supervised correspondence study is the coöperative relationship that has, from the beginning, been maintained between the University Extension Division and the Teachers College of the University. This relationship helps insure that the courses prepared incorporate the best practice in pedagogical techniques and in subject matter content. The extension courses become, in fact, an expression of the philosophy of the Teachers College faculty and of the science of education.

This statement was prepared by K. O. Broady of the University of Nebraska.

A Study of Creative Composition.—The inquiry into the teaching of freshman composition, which was set up at Syracuse University under a grant from the Carnegie Foundation for the Advancement of Teaching, completed its experiments and resultant studies in June, 1935, after two and one-half years of intensive work.

The primary task of the inquiry was to test the effectiveness of an experimental method of teaching Freshman English. This method differed greatly from those commonly followed in other American colleges, so far as is known; though it is probable that individual teachers here and there, free to put their own original ideas into practical form, may be paralleling it.

A second objective was to prove the adaptability of this so-called "experimental" method of teaching to any campus, and in the hands of the average English instructor, even though not especially trained for the work.

The directors of the inquiry, as a first step, established at Syracuse three groups of freshman classrooms. Four sections (approximately 100 students) were instructed according to the experimental method, instructors being selected from those already engaged by the University. A control group was established, consisting of an equal number of sections, taught by a method practiced in several universities of high rank, and contrasting sharply with the "experimental" method. A third group followed the method used regularly among the freshmen at Syracuse University.

Standard procedures were used for securing groups comparable with each other in English ability and training. The basis for selection was a series of objective tests in English administered to all freshmen at entrance. Other variables, such as difference in instructional ability, were carefully controlled. Each method was used by several instructors, all of whom changed in the second year of the experiment.

One characteristic of the entire experiment was an avoidance of local "publicizing" so that the freshmen generally were not aware that their work was subjected to any special scrutiny. The directors considered it most important that no student should suffer in his educational experience by reason of the inquiry, and that all instructors should be heartily in sympathy with the method of teaching which had been assigned to them.

Samples of the work of all students were secured at the beginning of the year. Each was required to write three short themes, placing emphasis on imaginative

power, on reportorial accuracy, and on argumentative skill. In the middle of the year a second set of themes was secured, comparable in character to those first demanded, and a third set at the end of the year. These themes were rated for "general effectiveness" by three instructors who had had no share in the teaching. More objective analysis of the themes was used to supplement these ratings, and objective tests were also used as indications of progress.

As a by-path of the inquiry, experiments were undertaken to test the dependability of the usual subjective method of rating papers. Instructors who marked the themes were required six months later to mark them again, after sufficient time had elapsed for them to forget the mark previously given. The papers were submitted also to readers drawn from citizens in the community who had had no teaching experience but were generally considered to be men and women of cultivation and sound common sense. Comparison of these marks led to useful conclusions.

Another by-path of the inquiry was conducted by Floyd Allport in an attempt to discover the relation of a student's effectiveness in writing and the degree of revelation of personality detectable by experts. This study has been fully reported in a publication of the Columbia University *Archives of Psychology*.

A third by-path explored the possibilities of the oculophotometer as a means of measuring the ease with which a student's theme could be read by competent readers, as an indication of its effectiveness. Some unexpected and interesting results were obtained and will be fully described in the final published report.

A fourth by-path which was followed to a definite conclusion involved the use of the phrase "creative writing." General inquiry elicited the fact that a steadily increasing number of high school as well as college classrooms bear this title, but the teachers assigned to creative writing courses seem to have no clear definition of the meaning of the term. To many it means merely essays, stories, and verse, as distinguished from academic or journalistic forms. Obviously there is a confusion between the terms "creative" and "imaginative" writing. But the question of chief importance is whether or not all writing tasks are essentially creative; also whether or not the creative process is complete before the beginning of the writing task, or if the act of writing is itself a continuation of the creative act. The answer to this question has practical importance, because in one case a teacher of a so-called creative writing course has no other task than to train in the craftsmanship of reporting a completed creative experience; but under the other interpretation, the teacher is responsible for the encouragement and development of creative activity, and faces a much larger problem and a more serious responsibility. In order to throw light upon this and kindred questions which called for the aid of psychology, several distinguished psychologists were invited to Syracuse for a three-day conference. Their informal discussions were recorded in detail, and their conclusions are offered as one of the results of this inquiry.

As a supplementary test of the efficacy of the three types of classroom instruction, sophomores in the University, who had been in these various freshmen sections, during the second year of the experiment were invited to give, by letter, frank opinions of the English teaching that they had experienced the year before. These opinions were not received in large enough number to provide data which would be considered dependable from a scientific point of view. Their expressions, however, were so completely

in accord with other results obtained in the inquiry that they are of value.

Preceding the actual setting up of machinery for this entire inquiry a questionnaire (which avoided the impersonal and stereotyped characteristics of questionnaires in general) was sent out to 150 recognized leaders in this country including lawyers, clergymen, presidents of large industries, deans of graduate schools, and others who might be in receipt of letters from young college graduates. They were asked for an opinion as to the use of the written word by young people fresh from college training. The replies to this inquiry were so suggestive, so rich in comment and opinion, and so over-whelmingly critical of the present-day college product that they were published in full as the first report issued by the directors of this inquiry; and the summary of their conclusions formed a special justification for any such study as this.

Publications directly resulting thus far from the Syracuse inquiry have been six in number. Three were pamphlets published through Syracuse University and distributed to at least two thousand college executives, heads of English departments, school directors, and others throughout the country. A fourth report outlining the so-called experimental method of teaching was published in the *Educational Record*, the journal of the American Council on Education; reprints of this were purchased in quantity and similarly distributed. The fifth publication appeared in *Harper's Magazine* and was distributed in that way. The sixth was the report by Dr. Allport, "Written Composition and the Characteristics of Personality," published as a monograph by the Columbia University *Archives of Psychology*, December, 1934.

The study was directed by Burges Johnson, now of Union College, and Helene W. Hartley of Syracuse University who prepared the foregoing account. The final report is expected later in the fall.

Indiana University. — The School of Education, Indiana University, has been continuing its work in the field of bibliographies of school buildings, grounds, and equipment and has issued Part IV of the series. Part I of this series includes references on the subject previous to October, 1927; Parts II and III cover references published between October, 1927, and April, 1932; and Part IV those between April, 1932, and October, 1934. A *Bibliography of College and University Buildings, Grounds, and Equipment* was also published in 1934.

Two bulletins have been issued in the field of religious education. The first of these is entitled *The Old World Historical Background of Religious and Moral Education in the Schools of Countries Other than the United States of America.* A number of lessons in good will by teachers of Indiana have also been compiled under the title, *Some Practical Efforts to Teach Good Will.*

In the field of school organization a study has been published entitled, *Factors Affecting the Organization of School Attendance Units.*

Investigations under way at the present time include a survey of the Monroe County schools, a study in the guidance of 1B pupils through prognosis, and a study of "out-of-line" and unadjusted school children in Monroe County.

The Bureau of Coöperative Research, connected with the School of Education, has continued to assist the state each semester in the development of the state high school examinations. The tests developed at Indiana University include Algebra I, Plane Geometry, and Latin I and II.